IMPACT OF LANGUAGE IMMERSION PROGRAMS ON FOREIGN LANGUAGE

THESIS

Jean-Paul Chaussé, M.A.

Major, USAF

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DEPARTMENT OF THE AIR FORCE

AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

AFIT/GRD/ENV/08-M02

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Jean-Paul Chaussé, M.A.

Major, USAF

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Jean-Paul Chaussé, M.A.
Major, USAF

Approved:

_____//signed//_____	_____
Dr. Alfred E. Thal, Jr.	date
_____//signed//_____	_____
Lt Col Kent C. Halverson	date
_____//signed//_____	_____
Lt Col Patrick D. Kee	date

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Abstract

Communicating with other nations in their native language is an important and necessary aspect of a successful United States' foreign policy. Critical to this success is the ability of military personnel to communicate clearly when in contact with foreign nationals, whether in peace-time or war. The Air Force has made great strides in the past 10 years to improve its foreign language capability, particularly through its application of the Language and Area Studies Immersion (LASI) program. The LASI program has significantly improved the foreign language capability of the Air Force, specifically those with previous language scores in the mid-tier range. The main goal of this thesis was to quantify that increase in language capability, thus allowing those responsible for the Air Force language capability to make appropriate decisions regarding the future direction of the Air Force's Language program. An additional aspect of this thesis is to investigate possible correlations between language capabilities and personality dimensions; therefore, as part of this study, Air Force officers (linguists) were surveyed to obtain language scores, measure personality dimensions and efforts to retain their language.

to my loving wife
whose sacrifice and gentle encouragement
helped make this a success

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I owe a great debt of gratitude and appreciation to my advisor whose help, guidance, advice and encouragement have been invaluable as well. I would also like to thank my classmates who helped more times than I can enumerate. Finally, I wish to thank my Chinese teacher for her efforts to teach me such a challenging and venerable language which I hope to study the remainder of my days: xie xie du lao shi.

Jean-Paul Chaussé

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Chapter 1. Introduction

It takes only one experience in trying to communicate with someone who does not speak the same language to discover the need for an interpreter and see the benefits of learning a foreign language. Anyone who has tried to learn another language can attest to the fact that it is a very difficult and time intensive endeavor. What is it about foreign languages that makes them hard to learn them for some and easier for others? This study focused specifically on Air Force linguists and factors that impact their ability to learn and retain a foreign language.

Background

Learning a foreign language is only the start of the linguistic process. Once an individual has opened the door to a new language, there is always an unperceivable force pushing the learner back through that door. That force is the requirement to continually progress in the language or risk losing it. Moyer (1988) suggested that if a linguist wants to retain a foreign language, they should use it on a daily basis. His suggested methods have proven beneficial to many linguists over the years.

The time required to retain proficiency in any foreign language has always been a dilemma for linguists. Many researchers (e.g., Krashen, 1980; Graham, 2004; Brown, 2001; Nunan, 1999) have found that daily reading has been a very helpful method of learning and retaining a foreign language. However, the utility of a foreign language is a factor in how much effort (i.e., time) linguists expend to retain the language. For example, if one has previously

learned the 'Urdu' language of Pakistan and India at some time in their life but never found occasion to make good use of it, they would probably be hard-pressed to expend time, money, and energy toward retaining it. Even if one overcomes the problem of practicality, the expenditure of time has always been a hindrance toward language retention. Normally, there must be something to draw them toward a specific foreign language capability and give them the desire to retain the language, whether that something comes from their family history or simply a bond the linguist has formed with that culture or language. Time and motivation are only two of many variables though.

De Bot, Lowie, and Verspoor (2005) argued that language can be seen as a dynamic system, i.e., a set of variables that interact over time, and that language development can be seen as a dynamic process. Language development shows some of the core characteristics of dynamic systems: sensitive dependence on initial conditions, complete interconnectedness of subsystems, emergence of attractor states in development over time and variation both in and among individuals. From their study, one can see that there are a myriad of learning theories governing how people learn a foreign language: the linear path, information processing model, emergentism method, cognitive and functional linguistics methods, and competition models. Each of these theories includes a variety of variables that interact as we learn foreign languages (De Bot et al., 2005). In brief, language is a complex means toward the goal of communication.

Much of the research on foreign language retention has been centered on aptitude and motivation (e.g., Oller et al., 2001; Bialystok, 1978; Oxford and Shearin, 1994; Gardner and Lambert, 1974; Diller, 1981; Sparks and Ganschow, 1991). In order to help broaden the scope of the research to date, this study has avoided these two factors and focused instead on personality factors to investigate which aspect of personality may influence foreign language retention. This

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is not meant to infer that there is little or no research done in the area of personality and language, simply that there is substantially less than has been done in other areas. Dewaele and Furnham (1999:509) agreed with this when they wrote "a relatively small number of linguistic studies focus on extraversion (*a personality trait*) as an independent variable" (italics added). Another rationale for not including aptitude was that the environment for this study was Air Force linguists who are already proficient (to varying degrees) in their foreign language of choice. This means that the linguists have already shown an aptitude for foreign languages. Hence, there was little reason to burden this survey and research with extraneous questions to which the answers are already quite apparent (language aptitude of current linguists).

The personality factors for this research came initially from the Big Five personality traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism (Costa and McCrae, 1992). From these five traits, agreeableness and neuroticism were not considered because they are not referenced in the literature as having any impact on language learning or learning in general (e.g., Hough and Schneider, 2006; Major et al., 2006; Judge, 1997; Lee and Klein, 2002; McCrae and John, 1992; Moutafi et al., 2004). Although not part of the popular Big Five, self-efficacy was very evident in the literature (e.g., Chamot and O'Malley 1996; Oxford and Shearin, 1994; Cotterall, 2002) and was incorporated in the research. Although no articles were found linking proactive personality to second language achievement, two studies were found (Bateman and Crant, 1993; Crant 1996) that appear to lend themselves to the concept.

Air Force Relevance

Crump (2001) found that more than 80 federal agencies within the U.S. government require foreign language proficiency to fulfill their duties. The main reason for this requirement is that the federal government must communicate with all nations, and it would be imprudent for the United States to rely entirely on linguists provided by those nations. This need for interpreters is also applicable to the U.S. military, which has recognized the need for foreign language capabilities since World War II to effectively carry out its mission (Conway, 2004). Maintaining this capability becomes more difficult each year though as the count of languages used in the world has grown to almost 7,000 different languages (Anderson, 2008).

Like all U.S. military services, the Air Force is an organization capable of global power projection. Yet with only a limited central overarching language program, it remains difficult to effectively communicate in the native tongues of many countries where it must operate. Therefore, the Air Force must review its language needs, catalogue its assets, and plan for meeting its shortfalls in the quickest and most economical manner possible in order to meet its communication needs in the world arena. Institutionalizing the processes by which the Air Force recruits, trains, sustains, and manages its language professionals is key to shaping the service's future effectiveness (Conway, 2005).

The means of measuring foreign language capabilities for the military is currently the Defense Language Proficiency Test (DLPT). The DLPT is administered to anyone with a foreign language capability with a desire to document the extent of their capability. There are three aspects to the test: listening, speaking, and reading comprehension. The latter is usually administered only in cases where the individual will be in a position where they must clearly

speak the foreign language in question. Once members achieve proficiency, the Air Force has a number of programs to help them retain this foreign language capability.

One program implemented by the Air Force to help officers perfect an existing language capability is the Language and Area Studies Immersion (LASI) program. The LASI program allows Air Force officers who already possess a beginning knowledge of a foreign language to attend a language school in the native country where it is spoken. The program is conducted under the concept of complete immersion, a term that has been well outlined in the literature (e.g., Swain and Lapkin, 1982 and 1986; Genesee, 1987; Johnson and Swain, 1997; Lambert andTucker, 1972; Rebuffot, 1992). In fact, the students are asked to embrace their immersion entirely and avoid speaking English even with their fellow American students.   During the four-week tour, the student lives with a family in that country, eats dinner with that family, and socializes with them. The student also attends language classes during the day, visits local tourist attractions, and socializes with classmates, instructors, and local nationals for the majority of the four weeks to practice and improve upon their language capabilities.

According to the Air Force Culture and Language Policy Office (2007), past experience has shown that LASI participation has helped Air Force linguists to improve their language capability. This has been easy to document because participants are required to take the DLPT prior to leaving for their LASI tour and again after they return. However, it is not known how much improvement has been seen by the linguists after participating in the LASI program. Therefore, the main goal of this study was to investigate and quantify the impact of the LASI program on foreign language acquisition and retention of Air Force officers. In order to quantify the impact, this study will compare the information on Air Force officers (linguists) who have not participated in the LASI program, with those linguists who have participated.

Problem Statement

The importance of having a foreign language capability for the Air Force is obvious for reasons already outlined. One aspect of this study was to focus on the individual linguist and what factors impact his or her ability to learn and retain a language. Knowing what influences a linguist to study and practice his or her language will help the Air Force shape their future language capabilities. The problem investigated in this study was two-fold. First, as outlined above, the impact of the LASI program was explored. More specifically, how does participation in the LASI program improve foreign language acquisition? Second, the impact of an individual's personality was examined. To be more precise, how do conscientiousness, extraversion, openness to experience (or openness), pro-activity and self-efficacy affect the ability to achieve a certain level of language capability? These questions were analyzed by investigating the hypotheses shown in Figure 1. It was posited that self-efficacy, extraversion, conscientiousness, proactive personality, and openness each have a direct and positive effect on an individual's ability to achieve a language capability. Furthermore, it was posited that LASI participation has a direct and positive effect on the improvement of DLPT scores. By developing the model in Figure 1, and testing it using Air Force linguists as test subjects, this research hopes to shed light on the study of foreign languages and thereby help the Air Force improve its foreign language base.
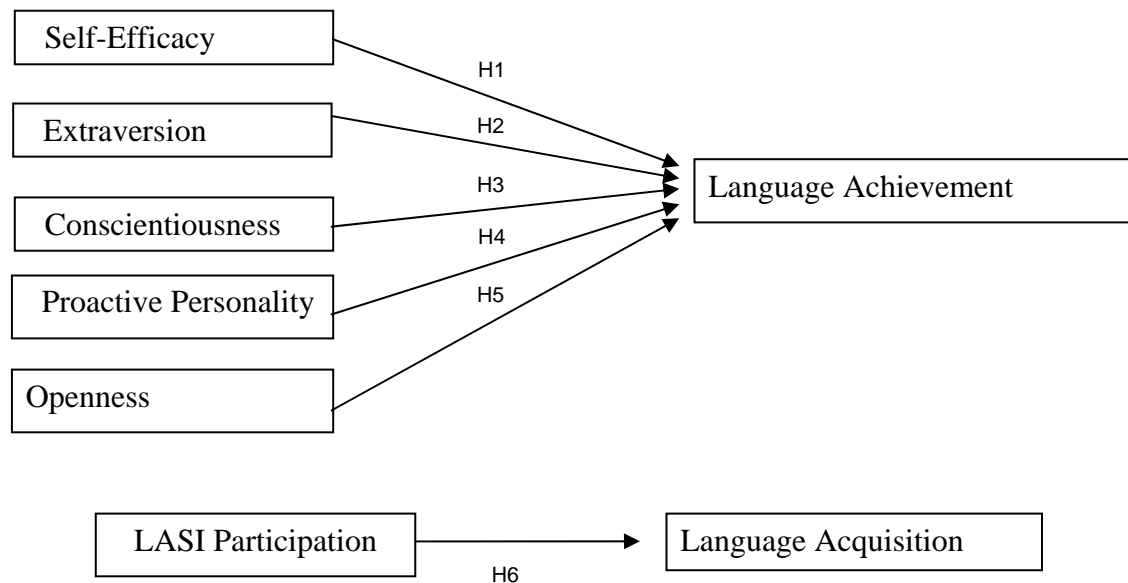
Figure 1. Factors in Language Achievement & Language Acquisition

Assumptions

The following assumptions were made for this research. It was assumed that the mental process of learning each language is the same for all the possible languages in the world. It was also assumed that each student had a fairly similar LASI experience, and that they took every advantage of the opportunity to learn as much as possible. Air Force enlisted linguists were not included in this study because the LASI program is not available to them. However, it was also assumed that the findings of this study will be general enough to apply to all Air Force linguists, enlisted and officer alike. It was also assumed that none of these factors will affect the outcome of the survey or the findings of this research.

Methodology

Survey questions were obtained from instruments already widely used and accepted in research, except for the sections dealing in demographics, effort to retain the language, and DLPT scores. The three personality instruments used in the survey were the Big Five Model (Costa and McCrae, 1992), the Proactive Personality Scale (Bateman and Crant, 1993), and the Self-Efficacy Scale (Bandura, 1994). The respondents were Air Force officers who had previously taken the Defense Language Proficiency Test (DLPT) and scored a minimum of 1/1 out of a possible 3/3. The data generated from the survey was analyzed using quantitative data analysis, specifically multivariate regression and correlation analysis.

Overview of Remaining Chapters

Chapter 2 will cover the literature review and will discuss past studies related to language capabilities and personality dimensions in more detail. This will give the reader a better understanding of the theoretical basis for the hypotheses presented in the model. Chapter 3 will discuss the regression techniques used during the data analysis. Chapter 4 will then discuss the actual data from this study and present the results of the research. Finally, Chapter 5 will summarize the main findings and provide recommendations for further research.

Chapter 2. Literature Review

The main purpose of the literature review is to show the background of past studies in this field of second language acquisition. The chapter is divided into sections covering each of the personality dimensions. In order of their review, the reader will find conscientiousness, extraversion, openness, self-efficacy, and pro-active personality. There will some overlap between the sections since the studies related to the specific personality dimensions often entail two or more of the dimensions in question.   The chapter concludes by providing additional information about the Language and Area Studies Immersion (LASI) program.

Conscientiousness

The aim of this section is to review the relevant literature on conscientiousness and language learning. Although the literature review of early works indicated a negative correlation between conscientiousness and language learning (e.g., MacIntyre and Charos, 1996; Carrell, Prince and Astika, 1996; Ehrman, 1990a, 1990b), later studies showed that the type of intelligence must be considered to be able to explain the relationship between conscientiousness and language learning. This will be explained shortly, but first, some relevant background material will be covered to help frame the explanation.

Clark and Watson (1999) describe conscientiousness as the quality of being painstaking and careful, or of following the dictates of one's conscience. It is composed of several elements such as competence, order (tendency to be well organized), dutifulness, self-discipline, deliberation (the tendency to think before acting), and need for achievement (Clark and Watson 1999). It is an aspect of what is traditionally called "character" (Goldberg, 1934). Furthermore,

Digman (1990) noted that conscientious individuals are also usually known to be dependable and persevering. Similarly, Van Eerde (2003) found that people who score low on a conscientiousness scale may procrastinate; they tend not to strive for excellence or accomplishment, lack determination, and are not self-directed. Adjectives that describe these individuals include lazy, careless, absent-minded, and not industrious (Costa and McCrae, 1992).

It is interesting to note that conscientiousness has been described as both a learned character trait and an inherited character trait. For example, Sockett (1988) considered character training to be regarded as somewhat disreputable because the qualities of determination, carefulness, concentration, self-restraint, patience, conscientiousness, and endurance are each different aspects of personal capabilities normally acquired in childhood. Bergeman et al. (1990) also showed in a study of twins (some reared together, others separated at birth or early youth) that the genetic influence on conscientiousness was substantial ($r = 0.52$, $p < .01$) and there was little evidence of shared rearing environment.

As it pertains to learning, early studies showed that conscientiousness was negatively correlated with learning. Martocchio and Judge (1997) monitored the effects of software training conducted by a public university and administered to clerical and administrative employees. Along with the training received, the participants were administered a questionnaire to measure, among other things, self-efficacy and conscientiousness. Since their findings indicated that conscientiousness was negatively correlated to learning ($r = -0.46$, $p < .05$) they postulated that conscientiousness, if taken to the extreme, may hamper learning.

However, Lee and Klein (2002) found a positive correlation in their research when they measured the relationship between conscientiousness, self-efficacy, self-deception, and learning over time. Their study extended the work of Martocchio and Judge (1997) and attempted to

better understand the processes through which conscientiousness may affect learning. Although

their results did not support the findings by Martocchio and Judge (1997), they noted that other

factors may have existed which were not accounted for in the 1997 study. This tends to lend

credence to the belief that the correlation between conscientiousness and intelligence is multi-

faceted.

Moon (2001) adds more complexity to the issue by postulating that conscientiousness has

two aspects: one for responsibility/dependability and another for achievement/striving. He cites

Mount and Barrick (1995) to show that responsibility/dependability is focused more on what the

individual can/should/must do for the community (others) and that achievement/striving focuses

on what the individual can/should/must do for his or her own self-interest. The equation for

conscientiousness is further exasperated in this study by the "escalation of commitment," which

has the following three elements.

> First, these are situations in which large amounts of resources have already been invested. Second, in spite of past expenditures, the performance of the project has not met expectations . . . finally, this places the decision maker in the dilemma of (a) deciding to continue with the project and incur additional expenses . . . or (b) terminating the project. (Moon, 2001, p. 533)

Moon (2001) uses the United States' involvement in Vietnam as an example and concluded that

most people will act in their own best interest in a contract/agency situation (one where a person

is placed in a position of responsibility to act on behalf of an organization). However, if that

same individual is monitored, he/she will tend to make decisions more suitable to the

organization's best interest. Whether these decisions are based on organizational socialization

(O'Reilly and Chatman, 1996), situational strength (Mischel, 1977), or individual differences

(Mount and Barrick, 1998) is left by Moon (2001) for future studies. His assertion is basically

that several factors impact these assumptions, thereby making it impossible to consistently

predict that individuals will tend to act in their own best interest at all times.

Moutafi, Furnham, and Paltiel (2004) subsequently performed a meta-analysis of these works and attempted to explain the contradictory results. Their study points out that although conscientiousness is always positively correlated with job performance, it is normally negatively correlated with intelligence. They also suggested that intelligence affects the development of conscientiousness. This would be the case if relatively less intelligent people (who have a desire to achieve) would work more diligently to overcome their shortcomings (i.e., lack of intelligence). Conversely, smarter people would not need to develop their conscientiousness to a higher degree since they would rely more upon their intelligence to accomplish most cognitive tasks. Ultimately, Moutafi et al. (2004) found that "the negative relationship between intelligence and conscientiousness is due to fluid intelligence affecting the development of conscientiousness, in an educated and need-achieving population."

There are two factors of intelligence, fluid and crystallized intelligence. These two factors were first identified by Cattell (1971). Fluid intelligence is the ability to find meaning in confusion and solve new problems. It is the capability of drawing inferences and understanding the relationship between various concepts independent of acquired knowledge. Crystallized intelligence is the ability to use skills, knowledge, and experience; although it relies on accessing information from long-term memory, it should not be equated with memory or knowledge. Fluid and crystallized intelligence are believed to be separate neural and mental functions (Cavanaugh and Blanchard-Fields, 2006). This is important to remember because Oller et al. (2001) showed that language usage stems from the crystallized intelligence vice the fluid intelligence.

Recall that the beginning of this section referenced the concept that the type of intelligence was important in explaining the relationsship between conscientiousness and

language learning. The study by Moutafi, Furnham, and Paltiel (2004) mentioned above shows that without taking into account the type of intelligence being measured, the findings of a study could erroneously find a negative correlation between conscientiousness and intelligence. By using language learning as a proxy for intelligence, it may be inferred that conscientiousness may correlate with language achievement. This is the basis for hypothesis 3 in Figure 1.

Extraversion

The term 'extraversion' and its opposite 'introversion' were first popularized by Carl Jung in the 1920s. Storm and DeVries (2006) describe extraversion as the act, state, or habit of being predominantly concerned with, and obtaining gratification from, what is outside one's self. Extraverts tend to enjoy human interactions and to be enthusiastic, talkative, assertive, and gregarious. They take pleasure in activities that involve large social events, such as parties, community activities, public demonstrations, and business or political groups. An extraverted person is likely to enjoy time spent with people and find less reward in time spent alone. They enjoy risk-taking and often show leadership abilities. An extravert is energized when around other people. Extraverts tend to "fade" when alone and can easily become bored without other people around. Extraverts tend to think as they speak. When given the chance, an extravert will talk with someone else rather than sit alone and think (Storm and DeVries, 2006).

Extraversion has been cited as the oft-neglected variable in the research over second language acquisition (Furnham, 1990). Dewaele and Furnham (1999, 2000) published two papers on extraversion as it relates to language learning. In their first paper, they theorized that extraversion, although not necessarily a factor in second language acquisition would be a factor in application of those languages (Dewaele and Furnham, 1999). The authors demonstrated that

language studies from the 1970s (Naiman, Frohlich, Stern, and Todesco, 1978; Wilson, 1977) using extraversion as a factor failed to not only properly categorize extraversion but also had unrealistic expectations of the concept. Hence, both Naiman et al. (1978) and Wilson (1977) found extraversion to be irrelevant to language learning.

> A majority of studies on extraversion and language performed by linguists focused on the effect of extraversion on language learning. One seriously flawed study by Naiman et al. (1978) on personality variables and language learning, where extraversion scores were found not to correlate with language test results, was quoted for two decades but never challenged in applied linguistic studies. This negative publicity for trait extraversion was so strong that researchers seemed to believe that no significant link could be expected between extraversion and any linguistic measure. (Dewaele and Furnham, 1999a:356)

This suggests that if Naiman et al. (1978) had used a wider variety of linguistic variables, covering not only written but also oral language, they might have found the expected correlations. Dewaele and Furnham (1999) go on to explain that "Some researchers subsequently found links between extraversion scores and linguistic variables depending on the type of linguistic material they used." Although they fail to reference these other studies, it is evident that Dewaele and Furnham (1999) demonstrated that the lack of significant correlations between extraversion and language-related measures was linked to the research design for both of those studies. Significant correlations found by Dewaele and Furnham (1999) showed that extraversion does affect speech production ($r = 0.25$, $p < .05$).

In their second study, Dewaele and Furnham (1999b) again cite some of the reasons that the early studies on extraversion did not show a correlation between extraversion and language. Some of these reasons were poor measures of extraversion, teacher nomination for the study, a small number of participants, and a limited range of linguistic variables. Given these flaws in the research design, it is easy to see how those factors would impact the findings, and how this would cause the erroneous conclusion that extraversion is not a factor in language research.

Other studies relevant to extraversion, but not directly related to language learning, have also been conducted. Mathews and Dorn (1995) and Eysenck (1981) found that extraverts have a superior short-term memory. Cheek and Buss (1981) found that extraverts tend to be less socially anxious, which leads to an increase in attention span. Additionally, Fremont, Means, and Eysenck (1979) argued that the lower anxiety and stress of the extraverts could increase the available processing capacity of the working memory. Each of these show the benefits of extraversion in a general learning environment, if not specifically language learning.

Dewaele participated in a string of studies (1993, 1999, 2002, 2005, and 2007) on second language acquisition and psychological variables (extraversion among them). In a 2005 study, the data showed a negative correlation existed between extraversion and second language acquisition. The last study (2007), which dealt with extraversion, involved 25 Flemish university students who had studied French in high school for at least 6 years. After analyzing the students' speech patterns and grammatical errors, they found that the formality of the situation, or rather the interpersonal stress that it provoked, had the strongest positive effect on the speech production process of the extraverts. Their notion of formal and informal situations didn't appear to have been based in scientific methodology, which may account for their findings and not the proposed stressors of the situation. One last finding from this study was that extraversion had no correlation with an individual's ability to write in a foreign language.

An earlier study by Suter (1976) was conducted using 61 non-native speakers of English. They were measured on 20 variables suspected of displaying significant relationships to pronunciation accuracy. The English pronunciation of the non-native speakers was then rated under controlled conditions by a panel of 14 native English-speaking judges. The variables which proved to be most strongly related to pronunciation accuracy were native language,

strength of the speaker's concern about his pronunciation, and amount of conversation carried on.

One of the variables found to have negligible relationships to pronunciation accuracy was

extroversion.

Finally, Wen and Cle´ment (2003) wrote on a subject of great interest of late given that

the number of Chinese language programs around the country has tripled in a recent 10-year

span. One of the key points pertinent to this section was that:

> Students with such personality traits as extraversion, impulsiveness, socialization and exibility [sic] are more risk-taking, although the basic claim for face remains unchanged… More risk-taking may characterise [sic] situations where more self-condense is felt. Because of the Chinese cultural tendency to try to save face, the relation between <u>desire</u> to communicate and WTC *(willingness to communicate)* is <u>moderated by</u> the extent to which particular students will accept <u>risk of losing face</u> (previously shown in their study to be a cultural norm)." (Italicized text added, bold and underlining used to show emphasis). (Wen and Cle´ment, 2003:30)

This infers that cultural norms may influence the tendency to follow personality traits.

Therefore, from these studies and as postulated in hypothesis 2, one may expect that extraversion

will impact language achievement.

Openness

Openness to experience (i.e., intellect) was first empirically applied by Fitzgerald (1966)

and is defined by Tesch and Cameron (1987) as tolerance for the unfamiliar, interest in ideas and

problems, and appreciation of experiences involving actions, fantasy, values, feelings, and

aesthetics. One of the basic findings from their study was that men and women have different

means of expressing their openness. Men are more open to inner experiences, and women are

open to outer (or expressive) experiences. Other studies have defined openness as aesthetic

sensitivity, awareness of one's emotions, vivid imagination, preference for novelty, and variety

and intellectual curiosity (Costa and McCrae, 1992; McCrae, 1993; McCrae and Costa, 1997).

Costa and McCrae (1992) dissected openness into six sub-factors of fantasy, aesthetics, feelings, actions, ideas, and values. As paraphrased from their model, the following sentences describe each of these sub-factors. Fantasy involves having a vivid imagination and an active fantasy life, which may contribute to a creative and rich life. Aesthetics refers to an interest and an appreciation of works of art and beauty, even in the lack of artistic talent or taste. Feelings relates to being receptive to emotions, and the evaluation that emotions are important in life. Action refers to the willingness to try different activities, and a preference for novelty over familiarity. Ideas involve being curious intellectually; this factor is characterized by an active pursuit of intellectual interests. Value implies readiness to examine social, political and religious values (Costa and McCrae, 1992).

Coan (1972) found that although people's scores for openness varied greatly, he found that they may be more open to one type of experience but closed to others. A good example of this comes from the individual who was always willing to sky dive, but would never try bungee jumping. Coan's (1972) findings also included one that showed women to be more open with regard to their feelings and thoughts, and men tend to be more open regarding their actions. Most people today would find this to be very intuitive and logical.

Other research (e.g., Estrada, 1999; Robinson, 2003) showed that a willingness to try new things might make it easier to engage in speaking a new language. In many studies, openness has been positively correlated with intelligence (Ackerman and Heggestad, 1997; Austin et al., 2002; Brand, 1994; Furnham, Chamorro-Premuzic, and Moutafi, 2005; McCrae, 1994; Moutafi, Furnham, and Crump, 2003; Moutafi, Furnham, and Paltiel, 2005; Zeidner and Matthews, 2000); and intelligence has been shown to positively correlate to successful second language learning (r = 0.56, p < .01) (Ehrman and Oxford, 1995). In one of the latest studies, Moutafi, Furnham, and

Crump (2006) found that many of the Big Five factors, openness in particular, correlated with language learning (r = 0.09, p < .05). That study was of interest to this one because it used the same Big Five instrument. Their overall findings for each of the factors were in keeping with past studies. Austin et al. (2002) and Kyllonen (1997) also show that intelligence is positively correlated with openness to experience, with a correlation of r = 0.3 and r = 0.45 (p < .05 for both), respectively. Hence, following what is posited in hypothesis 5, it is felt that openness will impact language achievement.

Self-efficacy

Bandura (1986) defines perceived self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with the judgments of what one can do with whatever skills one possesses." In a later work, (Bandura, 1994) further explains that self-efficacy beliefs determine how people feel, think, motivate themselves, and behave. In regard to the study of self-efficacy and individuals learning second languages, self-efficacy has often been divided into two categories: one measure of self-efficacy for those who are autonomous and another for students who are more dependent. Oxford and Shearin (1994) warned that "many second language students do not have an initial belief in their own self-efficacy (and) . . . feel lost in the language class." Autonomous language learners, on the other hand, are likely to have "a robust sense of self," according to Breen and Mann (1997:137) who claim that:

> Autonomous learners' relationship to themselves as learners is one which is unlikely to be undermined by any actual or assumed negative assessments of themselves or their work by significant others in the teaching-learning process. Assessment can be used by the autonomous learner as a potentially rich source of feedback or can be discarded if it is

judged to be irrelevant or unhelpful.

According to Cotterall (2002), this may provide teachers with a means of identifying and supporting individual learners who need to develop their sense of self-efficacy before they engage in learning tasks and lead to a crucial intervention in the language learning experience of such learners.

Pressley et al. (1990) showed that the use of learning strategies is demonstrably related to student achievement and proficiency. As well, Zimmerman and Pons (1986:621) explained that,

> Research has repeatedly shown this relationship in content fields ranging from physics to reading and from social studies to science. In light of this remarkable association between learning strategy use and positive learning outcomes, it is not surprising that students who frequently employ learning strategies enjoy a high level of self-efficacy, i.e., a perception of being effective as learners.

In another study, Nunan (1997) found that strategy instruction led to increased English as a Foreign Language (EFL) learning motivation. Similarly, Chamot et al. (1996) found that among native-English-speaking learners of foreign languages, strategy instruction lead to greater strategy use and self-efficacy ($r = 0.31$, $p < .01$). However, in other studies, such as that of Mullins (1992) with EFL learners in Thailand, affective strategies showed a negative link with some measures of language learning proficiency ($r = -0.32$, $p < .05$). One reason might be that as some students progress toward proficiency, they no longer need affective strategies as much as before. Perhaps because learners' use of cognitive, metacognitive, and social strategies is related to greater language learning proficiency and self-efficacy, over time there might be less need for affective strategies as the learner progresses to a higher proficiency (Oxford, 2003).

Wong (2005) studied graduate pre-service teachers and explored the relationship between language learning strategies and language self-efficacy. Seventy-four graduate English-as-a-second-language teachers (13 males, 61 females) from a teachers' college in Kuching, Malaysia, participated in this study. These teachers were in a one-year course to prepare them to teach

English in school. Six categories of language learning strategies were identified from their responses to seven hypothetical learning contexts. The Pearson correlation coefficient ($r = 0.93$, $p < .01$) showed that there was a significant positive relationship between language learning strategies and language self-efficacy. Interview findings were in agreement with the findings. High self-efficacy pre-service teachers reported more frequent use of and a greater number of language learning strategies than did low self-efficacy pre-service teachers. Therefore, as shown in hypothesis 1, self-efficacy should have an impact upon language achievement.

Proactive Personality

Proactive personality is a relatively new instrument developed by Bateman and Crant (1993). Its primary purpose was to show an individual's personal disposition toward proactive behavior (need for achievement, dominance, and extracurricular and civic activities).   It has become widely accepted and has been used extensively (e.g., Korunka et al., 2003; Parker, Mohr and Wilson, 2004; Crant, 1996). These studies involved proactive personality as a factor in such issues as diversionary police behavior, entrepreneurial capability, and salesmanship. The main reason for including the proactive personality scale in the current research effort was that the Big Five personality dimensions are considered global personality dimensions, and aren't specific enough to provide the desired outcome. While the Big Five dimensions have been shown to be predictive of some meaningful outcomes (e.g., performance), there are some instances when more specific personality traits are more appropriate (Crant, 1996). While it is true that this instrument has never been used in any study dealing with language learning, it is hoped that including proactive personality will produce a positive result and show the relationship posited in hypothesis 4 of this study.

LASI

As briefly mentioned in Chapter 1, the Language and Area Studies Immersion (LASI) program allows Air Force officers who already possess a beginning knowledge of a foreign language to attend a language school in the native country where it is spoken for four weeks. As well, it was explained that each officer is required to take the Defense Language Proficiency Test (DLPT) prior to leaving for their LASI tour and again after they return. However, the overall improvement in DLPT scores as a result of LASI participation, and various personality factors, has not been quantified.

One of the main requirements to attend the LASI program is a listening/reading comprehension score between 1/1 (minimum) and 2/2 (maximum) on a scale from zero to three (i.e., 0/0 to 3/3). Generally, LASI tours are done in the late spring or mid-fall timeframe to avoid conflicts with the traditional summer vacations and end-of-year holidays. The number of participants for any one LASI location ranges from two to five. They live with host families where the language is spoken, and they eat dinner and possibly other meals with the family. Each family is required to spend one hour a night tutoring the member, and many cultural activities and visits are scheduled during the four-week tour for the members' edification and learning pleasure. As of 2007, over 90 countries/languages are available for LASI tours. In following hypothesis 6 of this study, it is believed that the LASI program will have a positive impact upon language acquisition as measured by the delta score.

Chapter Summary

This chapter presented a literature review of the main personality dimensions which have been explored in the area of second language acquisition. The chapter was divided into sections covering each of the personality dimensions used in this study: conscientiousness, extraversion, openness, self-efficacy, and pro-active personality. Some sections discussed more than one dimension, which was unavoidable since personality dimensions are often interrelated. Finally, the chapter provided more detailed information about the background of the LASI program.

Chapter 3. Methodology

There are a myriad of data analysis methods, and data analysis software programs, available to analyze data. This chapter will cover a description of the population and sample used in this study, with a brief explanation covering demographic questions. Then the measures and variables (DVs and IVs) will be discussed. Finally, the analysis techniques used in the course of this study will be explained, including the null hypothesis, Pearson's correlation, regression analysis, and the matching process for the Delta DLPT scores.

Survey Procedures

The data for this research was collected through a survey; therefore, this section provides information about the survey procedures used in this research effort. It begins by briefly describing the population of interest and the sample used to collect the data. The method in which the survey was administered is covered next, to include an explanation of the survey itself. Finally, a brief section will explain the demographics of the survey participants.

Population and Sample

The population for this study was all Air Force officers with demonstrated linguistic capabilities as measured by the Defense Language Proficiency Test (DLPT). As reported by the Air Force Culture and Language Policy Office (2007), there were 5,347 Air Force Officers with a recorded DLPT score of at least 1/1 (reading/listening) in the Military Personnel Data System as of October 2007. Since a primary goal of this study was to investigate Language and Area Study Immersion (LASI) effectiveness, 800 officers of the 5,347 who had a minimum DLPT score of 1/1 (some of whom had participated in a LASI event) were identified by the office of the

Secretary of the Air Force, International Affairs. As explained earlier, a DLPT score of 1/1 (listening comprehension/reading comprehension) is the minimum required for LASI participation. The 800 officers were contacted to request their participation in the study and 319 of them responded positively; of those, 164 actually participated in the survey. This equates to a response rate of 20.5 percent.

Survey Coordination

Before the survey process could begin, each participant was contacted by the Air Force Culture and Language Policy Office (2007) via email and provided their past DLPT scores since these would be self-reported within the survey. The test scores were collected in this manner to ensure anonymity. An email was then sent to all possible participants which included a link to the website for the electronic survey. Recipients of the e-mail were instructed that the survey would be accessible for a two-week period; additionally, e-mail reminders were sent at the half-way mark and as the two-week deadline approached. As participants responded to the on-line survey, the data was compiled directly into a database.

Demographics

The typical demographical questions found in most surveys inquire about age, gender, education level, etc. Most of these were not included in the survey for this study in an effort to maintain the brevity of the survey and avoid losing participants. Instead, demographic questions thought to be more pertinent were included. Some of these questions covered familial language, whether or not the participants had visited a country where their foreign language was spoken, and practical application efforts to use or study their foreign language.

Measures and Variables

        The survey in its entirety may be found in Appendix C. Two dependent and 11 independent variables (DVs and IVs) were used in this study. These variables, and associated measures, are explained in this section. The discussion of the DVs also explains how the DLPT scores were converted to allow them to be included as part of the statistical analysis.

Dependent Variables

        The two dependent variables used in this research were DLPT high scores Delta DLPT score. Survey participants were asked to self-report their five most recent DLPT scores as part of the survey. Instead of the standard DLPT scoring scale (0, 0+, 1, 1+…2+, 3), each DLPT score (both reading and listening) was converted to a whole number as shown in Table 1.

Table 1, Conversion of DLPT Scores

Standard DLPT Score	Converted Score
0	1
0+	2
1	3
1+	4
2	5
2+	6
3	7

An average DLPT score was then obtained by adding the reading and listening comprehension scores and dividing by two. The DLPT high score for any given individual was subsequently considered to be the maximum average of converted values. The Delta DLPT scores were obtained by taking the difference between two sequential years of DLPT scores for each person. Only five DLPT scores were reported by each individual, but the individuals took the tests in different years. Hence, although it is only possible for one person to have a maximum of four

Delta DLPT scores; the varying years of DLPT scores provided enough data to obtain five year

groups from 2002 to 2007. Referring to the model shown in Figure 1, the first part of the study

compared the DLPT high scores to personality dimension measures and the second part analyzed

Delta DLPT scores within each respective year group. Additionally, all Delta DLPT scores were

aggregated and analyzed to investigate the impact of participation in the LASI program on

language acquisition.

Independent Variables

The independent variables used in this study are listed in Table 2. The table also includes

the format of the variables and the location of each variable in the survey (denoted by the

question numbers). *LASI* represents whether or not the individual has attended a LASI tour.

Practical Application is a 6-item instrument designed to measure how much effort the individual

exerts in using various methods to retain their foreign language. *Years of Same Effort* asks them

how long they have maintained this same level of effort from the *Practical Application* question.

Family and friends who speak the language asks them with whom they use their language

(uncles, aunts, parents, friends, etc.). *Visited country where language spoken* is a yes-no

question and is self-explanatory. *Days* asks them to report how many days (accumulative) they

have spent in the country where their foreign language is spoken.

Table 2. Independent Variables Used

Independent Variable	Variable Format	Question Number(s)
LASI	Binary	6-7
Practical Application	Discrete, Scale 1-5	8-13
Years of Same Effort	Continuous	14
Family and friends who speak the language	Binary	15-20
Visited country where language spoken	Binary	21
Number of days in that country	Continuous	22
Proactive Personality score	Discrete, Scale 1-7	23-39
Self-efficacy score	Discrete, Scale 1-5	40-49
Extraversion score	Discrete, Scale 1-5	
Conscientiousness score	Discrete, Scale 1-5	50-79
Openness score	Discrete, Scale 1-5	

To construct the survey, the literature was reviewed to ascertain the factors which have been shown to influence language learning and retention. As a result, several personality measures as discussed in Chapter 2 were used in the survey to evaluate self-efficacy, conscientiousness, openness, pro-activity, and extraversion. The three measures thought to provide the best insight into these personality dimensions were the Big Five Personality Test, Proactive Personality Scale, and General Self-Efficacy Scale. The Big Five Personality Test was first posed by L.L.Thurstone (1934). Only three of the five personality dimensions from the Big Five were used (openness, conscientiousness, and extraversion). Each of these dimensions was evaluated using a 10-item measure developed by Goldberg (1993) and has a reported Cronbach's alpha of 0.84, 0.79, and 0.87, respectively. Another measure used in the survey was the Proactive Personality Scale, which was created by Bateman and Crant (1993). It has a reported Cronbach's alpha of 0.89 and is comprised of 17 items. Finally, the self-efficacy measure, first used by Bandura (1986) was used in this study. It has a reported Cronbach's alpha of 0.91 and uses a 10-item measure. The wording of the items in the various measures was not changed for

their use in this study. For the personality measures, a Cronbach's alpha was calculated to compare against values reported with the measures.

Analytical Techniques

This section expounds upon the variables and measures used in the study. One important historical note that will be considered while analyzing the data is the Air Force's change in policy regarding Foreign Language Proficiency Pay (FLPP). Since the Air Force stopped paying FLPP for many languages in June of 2006 (considered a major historical event for the purposes of this study), every effort will be made to avoid comparing pre-2006 cases with post-2006 cases. The remainder of this section discusses the analytical tools used in this research.

Null Hypothesis

The null hypothesis is a hypothesis about a population parameter. According to Lane (2008), the purpose of hypothesis testing is to test the viability of the null hypothesis in the light of experimental data. The null hypothesis is often the reverse of what the experimenter actually believes; it is put forward to allow the data to contradict it. Depending on the data, the null hypothesis may or may not be rejected as a viable possibility (Lane, 2008).   If the null hypothesis cannot be proven, then the alternate hypothesis must be accepted; for this research, the alternate hypotheses are shown in Figure 1.

Pearson's Correlation

The Pearson's correlation compares each variable in a study to each of the other variables to measure the strength of the relationship between them. For each pair of variables compared, a

Pearson's correlation will produce a number between minus one and plus one (-1 to +1). This correlation allows the researcher to check for potential multicollinearity issues (numbers lower than -0,7 or above 0.7). Multicollinearity between two variables means that the two variables are closely related and have a high degree of overlap in their explanation of the dependent variable. With a high degree of overlap, the regression model has trouble separating which portion of the explained variation belongs to which variable. Thus, if both variables are left in the model, the multicollinearity will negatively impact the accuracy of the beta coefficients. If a multicollinearity issue exists between two variables, then the one that has the weakest influence should be removed. During the regression analysis, the Value Inflation Factor (VIF) scores will be used to test for multicollinearity.

Regression Analysis

A regression analysis is performed to produce a model in an attempt to quantify how much each of the IVs influences the DV. The regression analysis will provide several indices such as the R^2 value, *p*-value, *y*-intercept, and beta value. The R^2 value is a measure of how well the model fits the data from the study. The p-value provides the probability of committing a Type 1 error. That is, it provides the likelihood that we conclude that the findings are significant, when they are not. Thus, low p-values provide confidence that our findings are significant. The y-intercept is the value of the DV when all of the IV values are zero. Finally, the beta value is an expression of the amount of change in the DV one would expect for a given amount of change in the IV associated with that beta.

Delta Score Year-Group Matching Process

Each case for the delta score was compared to cases within the same year group to control for temporal influences. The cases were then combined into two separate comparison groups: LASI-participants and non-LASI participants. Those individuals who participated in a LASI tour formed the treatment group, while all others who meet the LASI participation requirements (mid-tier DLPT scores) were considered the comparison group.

Chapter Summary

This chapter covered a brief description of the population and sample used in this study, with a brief explanation covering demographic questions. Then the measures and variables (DVs and IVs) were covered. Finally, the analysis techniques used in the course of this study were discussed, which included the null hypothesis, Pearson's correlation, regression analysis, and the matching process for the Delta DLPT scores. Whereas this chapter has spoken of data analysis in generalities, Chapter 4 will explain the actual data analysis from this study in detail.

Chapter 4. Data Analysis

This chapter presents the results of the data analysis. Initially, the statistics for the

Defense Language Proficiency Test (DLPT) high scores are briefly discussed. This is followed

by the Delta DLPT scores. Each of these sections includes both descriptive and inferential

statistics. The high score analysis is explained first to help lay the foundation for the reader to

better understand the more intricate delta score analysis. Finally, a brief discussion of internal

validity is provided. The JMP output for the data in this chapter may be found in the Appendix.

DLPT High Scores

This section covers the descriptive and inferential statistics for the DLPT high scores.

The high score data will be shown in various tables; additionally, the analysis methods are

explained.

Descriptive Data

The descriptive data for DLPT high scores and personality dimensions are shown in

Table 3. From the survey data, the mean for proactivity appears to be high compared with the

other personality dimensions; however, this is due in part to its different Likert scale (1-7 vice 1-

5 for the others). If the proactivity score were converted to a 1-5 Likert scale, it would be

approximately 3.70; so it is still reasonable to say that the participants have above average

proactivity scores. Most of the other scores center around 3.0, which indicate that the

respondents tended to have neutral feelings about themselves regarding the dimensions.

Table 3. Descriptive Data for DLPT High Scores

Variable	Mean	St. Dev.
DLPT High Score*	6.86	0.5
Proactivity **	5.18	0.79
Self-Efficacy	3.40	0.39
Extraversion	3.04	0.31
Conscientiousness	3.03	0.31
Openness	3.12	0.32

* Converted scores on a 1 to 7 scale
** 1-7 Likert scale; all others use 1-5 Likert scale

Inferential Data

Before conducting any regression analysis with the data, the correlation analysis was conducted. As shown in Table 4, all of the personality dimensions were highly correlated ($p <$ .01) with each other. This is consistent with the findings of previous studies (e.g., Moutafi, Furnham, and Crump (2006); Lee and Klein (2002)). The Cronbach's alpha values were all well above the 0.8 value, which indicated a high level of reliability for those sections. However, none of the personality dimensions were correlated with the High DLPT score variable. This supports the findings of Naiman et al. (1978) and Wilson (1977).

Table 4. Pearson's Correlation for DLPT High Score IVs

	Mean	St.Dev	High	PP	SE	E	C	O
High	6.86	3.84						
PP	5.18	0.79	-0.01	(.89)				
SE	3.40	0.39	0.03	0.62*	(.91)			
E	3.04	0.31	-0.01	0.29*	0.33*	(.87)		
C	3.03	0.31	-0.08	0.29*	0.25*	0.27*	(.86)	
O	3.12	0.32	-0.04	0.47*	0.51*	0.32*	0.39*	(.86)

* $p < .01$; Cronbach's alpha shown in the diagonal; JMP output for data may be found in the Appendix

Regression analysis of the high score data indicated that none of the personality dimensions were significant predictors of second language achievement or second language acquisition. The regression analysis also indicated that the IVs were not significant predictors of language even at the 0.1 significance level. These findings tend to support the findings of Dewaele and Furnham (2000) whose study was only in regards to extraversion. Yet that study noted the importance of continued research in the area of personality dimensions and the spoken language.

Delta DLPT Scores

  This section covers the descriptive and inferential data for the Delta DLPT scores. The delta score data will be shown in various tables; additionally, the analysis methods are explained. The results of the regression analysis are also included.

Descriptive Data

  DLPT delta score descriptive data is shown in Table 5. It is important to note that only the data for individuals who had DLPT scores in the mid-tier range were used in the delta score study since that was a prerequisite for LASI participation. If this were not the case, then the inclusion of the large number of high scores in the comparison group would become an over-riding factor and mask the effort to find the relationship between the two groups. For this reason, the number of participants in this part of the study varies from year to year.

  It is important to note a very high percentage of individuals in this part of the study visited a country where their foreign language was spoken, more than double the percentage of LASI participants. Given the high number of respondents who visited those countries and only one case out of 119 with a decrease in delta DLPT scores, it would be easy to infer that visiting countries where the language is spoken must have an impact on the DV. This will be examined in more detail in the next section.

Table 5. Descriptive Data for Delta Scores

	N		Delta Score	LASI	Prac-App.	Years	Speak Family	Vsit	Days
ALL	59	Mean	0.58	0.41	3.08	6.86	0.36	0.92	279
		St. Dev	0.99	0.50	0.98	4.63	0.36	0.28	264
2006 to 2007	19	Mean	0.42	0.37	3.15	7.89	0.41	0.84	255
		St. Dev	0.85	0.50	0.95	5.67	0.38	0.37	277
2005 to 2006	19	Mean	0.76	0.42	3.10	6.53	0.36	0.89	315
		St. Dev	0.98	0.51	0.93	4.66	0.37	0.32	269
2004 to 2005	11	Mean	0.23	0.45	3.09	6.18	0.26	1	297
		St. Dev	0.61	0.52	1.12	3.12	0.32	0	265
2003 to 2004	10	Mean	0.95	0.40	2.88	6.30	0.40	1	241
		St. Dev	1.46	0.52	1.13	4.03	0.37	0	260
2002 to 2003	1	Value	-0.5	0	3.83	11	0	1	10

Inferential Data

The correlations for the aggregate data are shown in Table 6. Significant correlations exist between the number of days spent in a country where the foreign language is spoken and most all of the other IVs. The correlation between *LASI* and *Days* (-0.58) would seem to infer that those who had attended LASI may not feel a need to practice their language, but that is very counter-intuitive. The correlation between *Days* and *Practical Application* (0.38) would seem to infer that those with many days spent in the foreign country have a high tendency to practice their language, but seemingly do not have many opportunities to practice speaking with friends or family. This may be due to a lack of family members with whom to speak that language. For Tables 6-10, a Cronbach's alpha is only provided for IVs which used multiple-item instruments.

Table 6. Correlation Data for Delta-All Scores

	Mean	St.Dev	All	LASI	Prac	Years	Speak	Visit
All	0.58	0.99						
LASI	0.41	0.50	0.05					
Prac	3.08	0.98	0.03	-0.35**	(.89)			
Years	6.86	4.63	-0.09	-0.01	0.06			
Speak	0.36	0.36	-0.24	0.13	-0.03	-0.35**	(.87)	
Visit	0.92	0.28	-0.01	0.01	0.01	-0.04	0.01	
Days	280	265	-0.26*	-0.58**	0.38**	-0.13	-0.32**	0.32**

$* p < .05$; $** p < .01$; Cronbach's alpha shown in the diagonal where applicable

For the 2006-2007 year-group shown in Table 7, there is a significant correlation between those who *speak* the language with their family and the number of years they have been *practicing* that language ($r = -0.62, p < 0.01$). This would seem to infer that the more years these individuals have been speaking their foreign language, the less they feel a need to speak with their family members and friends. This seems counter-intuitive but may be due to a lack of family members with whom to speak that language.

Table 7. Correlation Data for Scores of Delta Year-group 2006-2007

	Mean	St.Dev	2006-2007	LASI	Prac	Years	Speak	Visit
2006-2007	0.42	0.85						
LASI	0.37	0.50	0.20					
Prac	3.15	0.95	0.38	-0.14	(.89)			
Years	7.89	5.67	0.37	0.01	0.09			
Speak	0.41	0.38	-0.34	0.24	-0.20	-0.62*	(.86)	
Visit	0.84	0.37	-0.39	0.03	0.02	0.10	-0.11	
Days	255	277	-0.31	-0.41	0.20	-0.29	0.26	0.41

* $p < .01$; Cronbach's alpha shown in the diagonal where applicable

For the 2005-2006 year-group shown in Table 8, there is a significant correlation between the number of *days* spent in a country where the foreign language is spoken and those who have participated in a *LASI* tour ($r = -0.59$, $p < 0.01$). This would seem to infer, counter-intuitively, that those who had attended LASI may not feel a need to practice their language. There is also a significant correlation (($r = 0.47$, $p < 0.05$)) between the number of *days* spent in a country where the foreign language is spoken and the amount of effort those individuals have put into *practicing* their foreign language. This indicates that as the numbers of *days* increases, the amount of time spent *practicing* increases.

Table 8. Correlation Data for Scores of Delta Year-group 2005-2006

	Mean	St.Dev	2005-2006	LASI	Prac	Years	Speak	Visit
2005-2006	0.76	0.98						
LASI	0.42	0.51	0.16					
Prac	3.10	0.93	-0.02	-0.35	(.86)			
Years	6.53	4.66	-0.32	-0.15	0.18			
Speak	0.36	0.37	-0.17	0.28	-0.03	-0.26	(.89)	
Visit	0.89	0.32	0.36	-0.05	0.07	-0.15	0.11	
Days	315	269	-0.34	-0.59**	0.47*	-0.01	0.27	0.41

* $p < .05$; ** $p < .01$; Cronbach's alpha shown in the diagonal where applicable

For the 2004-2005 year-group shown in Table 9, there is a significant correlation between the number of *days* spent in a country where the foreign language is spoken and those who have participated in a *LASI* tour ($r = -0.33$, $p < 0.01$). This would again seem to infer, counter-intuitively, that those who had attended LASI may not feel as much of a need to practice their language. .

Table 9. Correlation Data for Scores of Delta Year-group 2004-2005

	Mean	St.Dev	2004-2005	LASI	Prac	Years	Speak	Visit
2004-2005	0.23	0.61						
LASI	0.45	0.52	-0.20					
Prac	3.09	1.12	0.41	-0.33	(.90)			
Years	6.18	3.12	-0.23	0.25	-0.25			
Speak	0.26	0.32	0.07	-0.32	0.08	-0.17	(.82)	
Visit	1	0	0.00	0.00	0.00	0.00	0.00	
Days	297	265	0.15	-0.33**	0.27	-0.03	0.35	0.00

* $p < .05$; ** $p < .01$; Cronbach's alpha shown in the diagonal where applicable

For the 2003-2004 year-group shown in Table 10, there is a significant correlation between the amount of time these individuals spent *practicing* their foreign language and whether or not they had participated in a *LASI* tour ($r = -0.73$, $p < 0.01$). This would seem to infer that those who had attended LASI may not feel a need to practice their language, possibly from a sense of over-confidence. From the last row in the table, the correlation ($r = 0.68$, $p < 0.01$) between the number of *days* spent in the foreign country with the amount of time they spent *practicing* their foreign language may infer that these individuals practice their language because they see the need to keep their language capabilities high for when they are in that country. These two correlations tend to agree with those found in the Delta-all correlations.

Table 10. Correlation Data for Scores of Delta Year-group 2003-2004

	Mean	St.Dev	2003-2004	LASI	Prac	Years	Speak	Visit
2003-2004	0.95	1.46						
LASI	0.40	0.52	-0.11					
Prac	2.88	1.13	-0.32	-0.73*	(.93)			
Years	6.30	4.03	-0.45	0.10	-0.04			
Speak	0.40	0.37	-0.30	0.03	0.10	0.04	(.82)	
Visit	1	0	0.00	0.00	0.00	0.00	0.00	
Days	241	260	-0.38	-0.61	0.68*	0.01	0.50	0.00

* $p < .01$; Cronbach's alpha shown in the diagonal where applicable

Regression Model

Given the information from Tables 6 through 10, regression analysis of the Delta DLPT

scores resulted in the equations shown in Table 11. The Delta-all model seems to indicate that

for every one point increase in the number of days the individual spent in the foreign country, a

very slight decrease in language capabilities was experienced. Although there may be many

possible explanations for this result, only two of them are presented here. First, the linguists may

have become lackadaisical and started using more slang terms and out of their vocabulary.

Second, the linguists may have become overconfident and spent less time practicing their skills.

The 2006-2007 model seems to suggest, counter-intuitively, that for those who have visited the

country where their foreign language is spoken they will experience a relatively large drop in

change in their DLPT scores; however, the *p* value was only 0.10. Finally, the 2006-2006 model

seems to suggest an increase in delta scores for those who have visited the country where their

foreign language is spoken. This model appears to be much more realistic and logical; it also has

a much higher R^2 value and better significance level (0.01). No meaningful models were found

for the other year-groups since none of their terms were found to be significant.

Table 11. Regression Equations for Delta DLPT Scores

Year Groups	Equation	R^2	*p* Value
All	Delta ALL = 0.86 - 0.001 (Days)	0.07	0.04
2006-2007	Delta 7-6 = 1.17 - 0.89 (Visit)	0.15	0.10
2005-2006	Delta 6-5 = -0.25 + 1.89 (Visit) - 0.001 (Days)	0.42	0.01

Internal Validity

One major issue with any study is the threat to internal validity. According to one definition from the UCLA Department of Education Glossary of Psychological terminology, internal validity is the degree to which the outcome of an event is a function of the variables that are measured, controlled, or manipulated in the study (Ender, 1998). This is an important issue because if these threats are not addressed and recognized, any number of variables for which no controls were implemented may have been the cause for the result of the study.

Historical threats exist within this study. One example of this type of threat occurred in June of 2006; this is when the Air Force stopped paying for language achievement and language acquisition for languages which were either not used in an official capacity on a regular basis or not considered 'strategic stronghold languages' (such as Arabic and Chinese). This is a historical threat to the internal validity of this study because any decrease in DLPT scores could be attributed to the loss of pay (an incentive to continue to study a foreign language).

Another example of a threat to internal validity is selection threat. For this study, selection threat is represented by the fact that participants who had very low scores may not have been comfortable revealing their scores by participating in this study. Additionally, some respondents who participated on the first day of the two-week period were asked to re-enter their data due to a website malfunction. If some of those original participants decided they did not believe the study was important enough to merit re-accomplishing the survey that would be an example of experimental mortality. As well, the few individuals who started the survey and stopped half-way through would fall into this category of internal threat to validity. A testing threat may also have existed because some participants have been taking the same DLPT versions for several years and are scoring high due to familiarity with the test, while others have

only taken it once or twice. As mentioned previously, the fact that individuals were self-selected as participants would be an example of a selection-type threat to internal validity. Since participants were self-selected, they could not be randomly assigned to either the study group or comparison group.

According to O'Sullivan et al. (2003), the implication of these threats is that some unknown similarities may exist between these participants, something as simple as a desire to participate in surveys. Possibly, some unknown similarity between those participants who have high DLPT scores may be a threat to internal validity. These threats were understood from the beginning of this study and were found to be acceptable and unavoidable risks.

Chapter Summary

This chapter presented the results of the data analysis for this study; it included descriptive and inferential data for both the DLPT high scores and Delta DLPT scores for specific year groups. The data was analyzed primarily using regression and correlation analyses. Additionally, a section on internal validity was presented. The conclusions and recommendations will be covered in Chapter 5.

Chapter 5. Results, Conclusions, and Recommendations

Results

   Within this study, personality dimensions and efforts to acquire a second language were studied to ascertain any possible correlation with language capabilities as measured by the Defense Language Proficiency Test (DLPT) scores. This was done in two ways: the DLPT high scores and the Delta DLPT scores. In keeping with the methodology throughout this study, the DLPT high score portion will be covered first.

   The hypotheses presented in Chapter 1, positing that language capabilities correlate with some personality dimensions, were not found to be true. The data for the DLPT high score portion of this study showed mostly average personality scores for the survey participants, with only slightly higher-than-average scores in proactivity. Regardless of those scores, no correlation at any level of significance was found between the personality dimensions and language achievement.   This meant that the personality dimensions were not good predictors of DLPT scores. The following section reviews the findings from past studies in this area to explain whether this study resulted in similar findings.

Past Studies Summary

   This section mirrors the order of personality dimensions as discussed in Chapter 3. Each sub-section covers the studies reviewed for the five dimensions to summarize past findings. Then a brief explanation will follow pertaining to the support of those studies and their findings to this study.

Conscientiousness

From Chapter 3, it was clear that most of the past studies (e.g., MacIntyre and Charos, 1996; Carrell, Prince and Astika, 1996; Ehrman, 1990a, 1990b; Martocchio and Judge, 1997; Moutafi, Furnham, and Paltiel, 2004) found that a negative correlation existed between conscientiousness and language learning. Lee and Klein (2002) found a positive correlation between conscientiousness, self-efficacy, self-deception, and learning over time. The findings from this study can neither support nor refute those findings.

Extraversion

Dewaele (2005) showed a negative correlation existed between extraversion and second language acquisition, while two other past studies (Naiman et al., 1978; Wilson, 1977) found extraversion to be irrelevant to language learning. The findings from this study tend to support the latter case.

Openness

Of the many studies cited in Chapter 3 on the subject of openness, most of them (e.g., Ackerman and Heggestad, 1997; Austin et al., 2002; Brand, 1994; Furnham, Chamorro-Premuzic, and Moutafi, 2005; McCrae, 1994; Moutafi, Furnham, and Crump, 2003; Moutafi, Furnham, and Paltiel, 2005; Zeidner and Matthews, 2000; Austin et al., 2002 and Kyllonen, 1997; and Ehrman and Oxford, 1995) found a positive correlation between intelligence and openness. Since these studies focused more on intelligence instead of specifically language learning, they were less germane to this study. Moutafi, Furnham, and Crump (2006) conducted a broader study covering many of the Big Five factors, openness in particular, and found a

correlation between openness and language learning. The findings of this study can neither refute nor support those findings.

Self-Efficacy

Only one study was cited in this study for self-efficacy. Wong (2005) found that high self-efficacy had a positive correlation with a greater number of language learning strategies. It was posed that this would result in an increase in second language acquisition. The findings of this study can neither refute nor support those findings.

Proactive Personality

The proactive personality instrument is relatively new, developed in 1993. Its primary purpose is to show an individual's disposition toward proactive behavior (need for achievement, dominance, and extracurricular and civic activities).   The main reason for including the proactive personality scale in this research was to add definition to the broader personality instruments also included in this study.   While it is true that this instrument has never been used in any study dealing with language learning, it was hoped that including proactive personality would prove useful. The findings of this study did not support that desire.

Delta DLPT Scores

The hypothesis for Delta DLPT scores stated that a correlation should exist between efforts to retain a foreign language and language achievement as shown by a change, or delta, in DLPT scores between sequential years. The findings varied depending on the year-group. When all the year-groups were combined, it was found that the number of days an individual spent in a

country where that foreign language was spoken correlated with the delta DLPT scores. In the 2006-2007 year-group, whether an individual had spent some time in their foreign language country showed a correlation with the delta DLPT scores. These first two findings were both found to be true in the 2005-2006 year-group. Finally, none of the IVs correlated with the delta DLPT scores in the remaining year-groups.

Conclusions

From the results of the data analysis, it would have to be concluded that the findings from this study do not support hypotheses 1-5, that personality dimensions correlate with language achievement. It would further have to be concluded that the findings from this study only partially support accepting hypothesis 6. The portion of hypothesis 6 which is supported by the data is that certain language retention efforts in this study correlate with language acquisition. The main retention efforts which support hypothesis 6 were whether or not the linguists had visited a country where the language was spoken, and the number of days spent in that country.

Recommendations

It is recommended that the Air Force leverage opportunities, other than LASI, for linguists to visit the country where their foreign language is spoken. As an alternative to that, it would also be recommended that the Air Force implement local programs for linguists to communicate with individuals who speak their foreign language. Within the study, it was evident that whether the linguists had visited foreign countries where their language was spoken was significant to increasing their DLPT scores. However, the findings of this study are in need of other similar studies to compare results before making any firm conclusions. The final

recommendation would therefore be that the Air Force sponsor future studies to test the effectiveness of programs that do not have a visitation component associated with them (Rosetta Stone, DLI, etc.).

Final Remarks

The Air Force mission will always include a need for interpreters to allow us to operate in areas where English is not spoken. The benefits of having a robust linguistic capability far outweigh the costs of maintaining that capability. Some of these benefits include communicating with the host country in their own language and understanding how to operate within the cultural confines of that country. These benefits will go a long way toward improving our relations with the host country and avoid creating new enemies. Enemies are often created simply for want of knowing which words and gestures would have been correct to use -- and which would have been better to avoid!

Appendix A - Foreign Language Survey Questions

The Air Force Culture and Language Policy Office (AF/A1DL) should have provided you with your past DLPT scores. Please use that information to fill out this section regarding your **primary** foreign language only. In the event you have not received this information, please email Capt Greg Duffy [Gregory.Duffy@pentagon.af.mil] to request that information before beginning this survey.

DLPT Scores (most recent first):

Year	Score

Have you ever participated in the Language and Areas Studies Immersion program (LASI)? (yes/no)
If yes, what year was the most recent year in which you participated in a LASI excursion?

For the last year, score your efforts to retain your **primary** foreign language on the following scale:
The following statements are: (1) not at all true (2) barely true (3) moderately true (4) mostly true (5) exactly true
In the past year, I have:

1　　Made no effort to use the language
2　　Practiced the language to myself in my head on a regular basis
3　　Listened to any speakers of that language in passing conversations
4　　Listened to audio tapes/TV program/radio broadcasts in that language on a regular basis
5　　Stopped people who speak that language to speak with them
6　　Read newspaper/journals/books in that language on a regular basis
7　　Write letters/documents in that language on a regular basis
8　　Done a few of the above
9　　Done many of the above
10　　Done all of the above

The above level of effort is true for the past how many years?

Demographics

In case you know more than one foreign language, the questions in this section deal **solely** with your primary foreign language.

1. Is your primary foreign language spoken by either any of your children?
2. Is your primary foreign language spoken by any of your siblings?
3. Is your primary foreign language spoken by either your mother or your father; or any of their siblings?
4. Is your primary foreign language spoken by either your grandparents or their siblings?
5. Was your primary foreign language spoken by your ancestors who are no longer living?
6. Do you have close ties outside of your family with people who speak your primary foreign language?
7. Other than a LASI experience, have you visited a foreign country where this language is spoken?
8. If yes, what was the duration of that visit (approximate number of days, accumulative)?

Answer the following 17 questions on a scale from 1-7
where 1 means the statement **least** represents you
and 7 means the statement **strongly** represents you.

1 I am constantly on the lookout for new ways to improve my life.
2 I feel driven to make a difference in my community and maybe the world.
3 I tend to let others take the initiative to start new projects.
4 Wherever I have been, I have been a powerful force for constructive change.
5 I enjoy facing and overcoming obstacles to my ideas.
6 Nothing is more exciting than seeing my ideas turn into reality.
7 If I see something I don't like, I fix it.
8 No matter what the odds, if I believe in something I will make it happen.
9 I love being a champion for my ideas, even against others' opposition.
10 I excel at identifying opportunities.
11 I am always looking for better ways to do things.
12 If I believe in an idea, no obstacle will prevent me from making it happen.
13 I love to challenge the status quo.
14 When I have a problem I tackle it head-on.
15 I am great at turning problems into opportunities.
16 I can spot a good opportunity long before others can.
17 If I see someone in trouble, I help out in any way I can.

Answer the following 10 questions using this response format:
(1) not at all true, (2) barely true, (3) moderately true, (4) exactly true
1. I can always manage to solve difficult problems if I try hard enough.
2. If someone opposes me, I can find the ways and means to get what I want.
3. I am certain that I can accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I can handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can find several solutions.
9. If I am in trouble, I can think of a good solution.
10. I can handle whatever comes my way.

Answer the following 30 questions using this response format:
(1) not at all true (2) barely true (3) moderately true (4) mostly true (5) exactly true

1. Am the life of the party.
2. Am always prepared.
3. Have a rich vocabulary.
4. Don't talk a lot.
5. Leave my belongings around.
6. Have difficulty understanding abstract ideas.
7. Feel comfortable around people.
8. Pay attention to details.
9. Have a vivid imagination.
10. Keep in the background.
11. Make a mess of things.
12. Am not interested in abstract ideas.
13. Start conversations.
14. Get chores done right away.
15. Have excellent ideas.
16. Have little to say.
17. Often forget to put things back in their proper place.
18. Do not have a good imagination.
19. Talk to a lot of different people at parties.
20. Like order.
21. Am quick to understand things.
22. Don't like to draw attention to myself.
23. Shirk my duties.
24. Use difficult words.
25. Don't mind being the center of attention.
26. Follow a schedule.
27. Spend time reflecting on things.
28. Am quiet around strangers.
29. Am exacting in my work.
30. Am full of ideas.

Appendix B - JMP 6.0 Output

DLPT High Score Regression Output

HIGH Predicted P=0.8759
RSq=0.01 RMSE=3.874
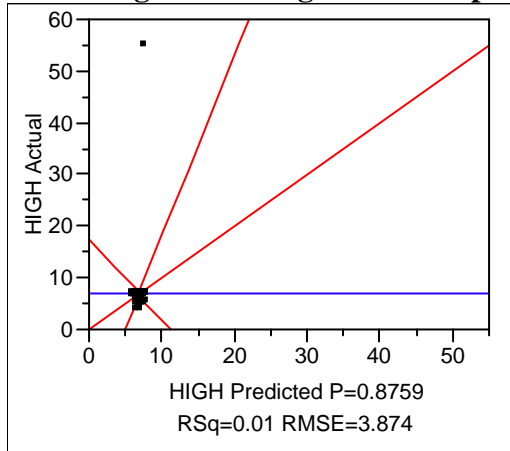
Summary of Fit

RSquare	0.011159
RSquare Adj	-0.01994
Root Mean Square Error	3.874001
Mean of Response	6.863636
Observations (or Sum Wgts)	165

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	5	26.9283	5.3857	0.3589
Error	159	2386.2535	15.0079	Prob > F
C. Total	164	2413.1818		0.8759

Lack Of Fit

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	158	2384.2535	15.0902	7.5451
Pure Error	1	2.0000	2.0000	Prob > F
Total Error	159	2386.2535		0.2837
				Max RSq
				0.9992

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF	Design Std Error
Intercept	8.8098699	4.098976	2.15	0.0331	0	.	1.0580731
PP	-0.131864	0.503935	-0.26	0.7939	-0.02726	1.7448263	0.1300814
SE	0.8839207	1.055275	0.84	0.4035	0.089891	1.8518716	0.2723994
E	0.1553502	1.065518	0.15	0.8843	0.012581	1.1972586	0.2750434
C	-0.92297	1.074912	-0.86	0.3918	-0.07492	1.2240949	0.2774683
O	-0.62158	1.193134	-0.52	0.6031	-0.05133	1.5608702	0.3079849

DLPT High Score Pearson's Correlation Output

Correlations

	HIGH	PP	SE	E	C	O
HIGH	1.0000					
PP	-0.0130	1.0000				
SE	0.0321	0.6229	1.0000			
E	-0.0022	0.2875	0.3316	1.0000		
C	-0.0764	0.2864	0.2532	0.2716	1.0000	
O	-0.0434	0.4656	0.5070	0.3189	0.3862	1.0000

Scatterplot Matrix

Delta DLPT Score Regression Output for 2006 – 2007

P=0.0818 RSq=0.56 RMSE=0.696
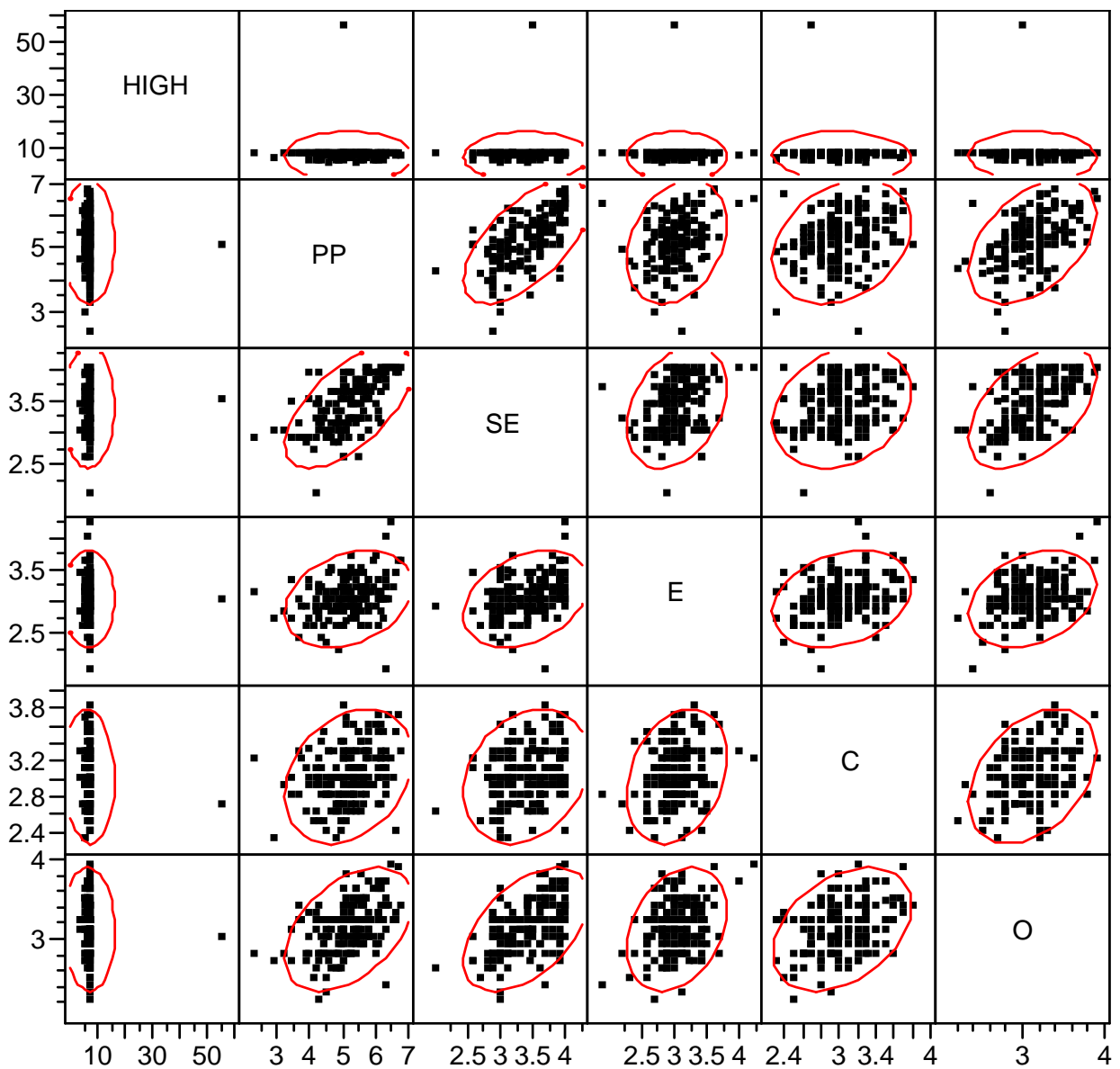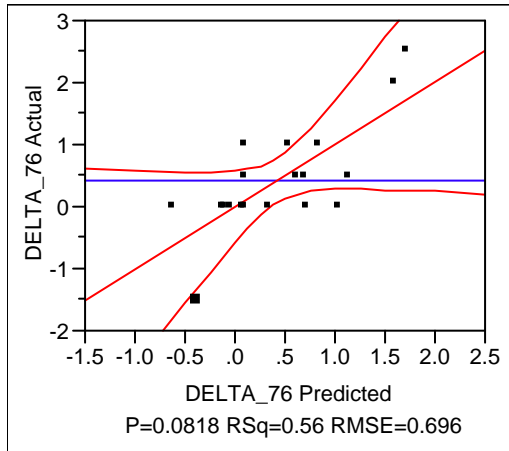
Summary of Fit

RSquare	0.557308
RSquare Adj	0.335963
Root Mean Square Error	0.696015
Mean of Response	0.421053
Observations (or Sum Wgts)	19

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	6	7.318340	1.21972	2.5178
Error	12	5.813239	0.48444	Prob > F
C. Total	18	13.131579		0.0818

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF	Design Std Error
Intercept	0.9862471	1.443769	0.68	0.5075	0	.	2.0743367
LASI	0.6996395	0.429818	1.63	0.1295	0.405956	1.686002	0.6175416
PRAC	0.2911692	0.186167	1.56	0.1438	0.323567	1.1601742	0.267476
YEARS	0.0343773	0.037955	0.91	0.3829	0.228033	1.7181749	0.0545317
SPEAK	-0.712682	0.624648	-1.14	0.2762	-0.32874	2.2503825	0.8974633
VISIT	-1.205038	0.543394	-2.22	0.0466	-0.52855	1.5398581	0.7807222
DAYS	0.0004807	0.000902	0.53	0.6038	0.156188	2.3278714	0.0012959

**Delta DLPT Score Pearson's Correlation Output for 2006 - 2007**

Correlations

	DELTA76	LASI	PRAC	YEARS	SPEAK	VISIT	DAYS
DELTA76	1.0000						
LASI	0.2038	1.0000					
PRAC	0.3751	-0.1430	1.0000				
YEARS	0.3713	0.0146	0.0926	1.0000			
SPEAK	-0.3405	0.2393	-0.2028	-0.6186	1.0000		
VISIT	-0.3884	0.0315	0.0179	0.0964	-0.1089	1.0000	
DAYS	-0.3116	-0.4092	0.2001	-0.2883	0.2574	0.4088	1.0000

Scatterplot Matrix

66
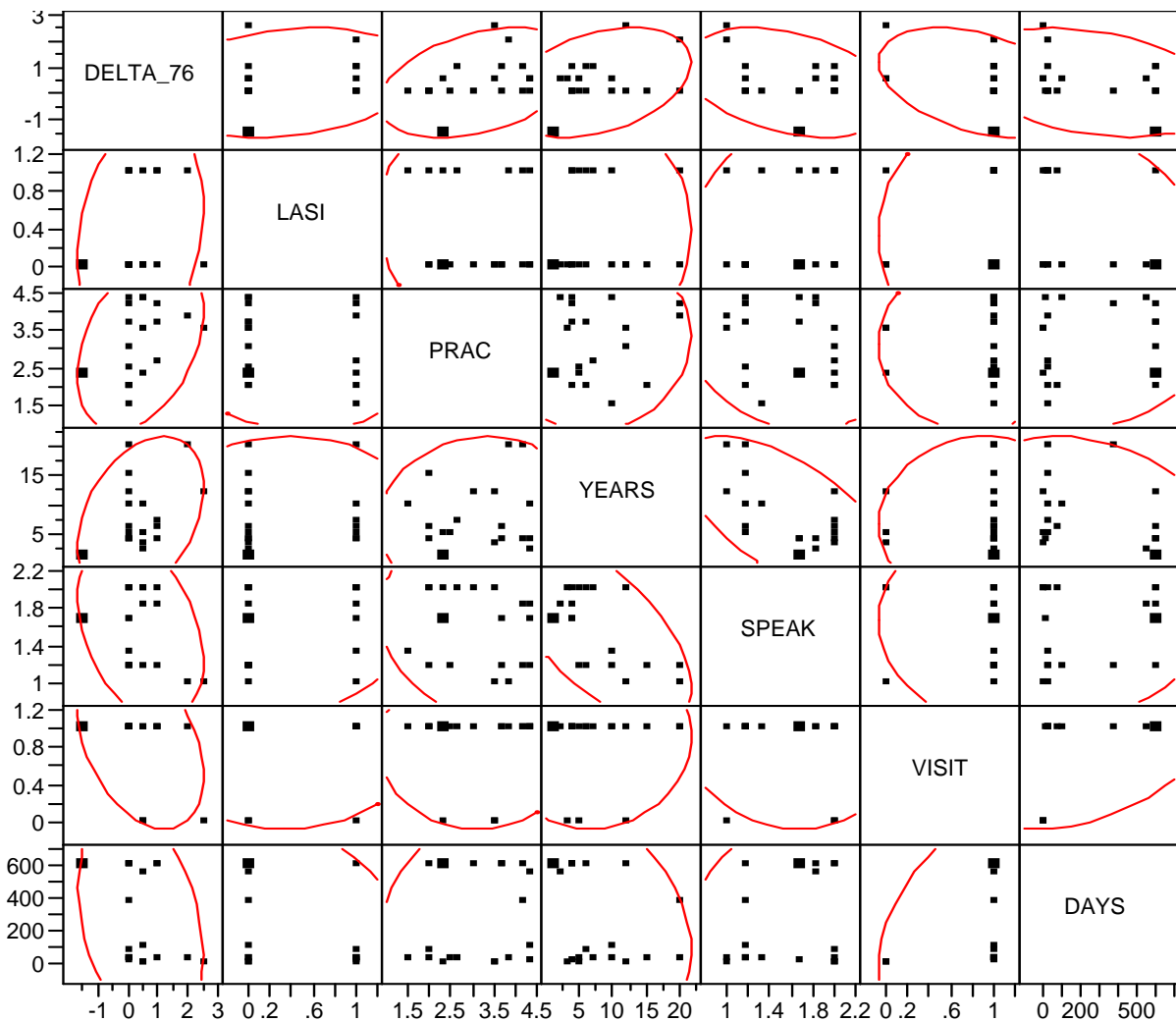
Delta DLPT Score Regression Output for 2005 - 2006
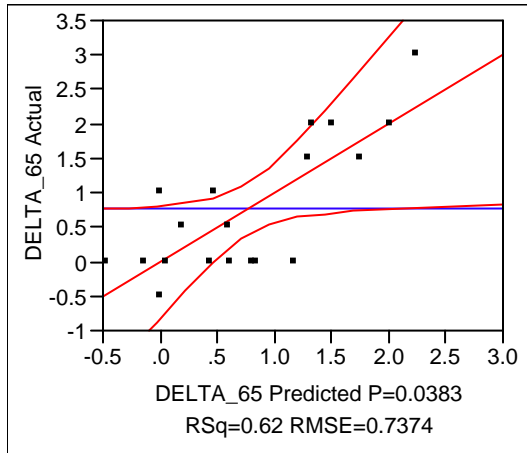
Summary of Fit

RSquare	0.620335
RSquare Adj	0.430503
Root Mean Square Error	0.737351
Mean of Response	0.763158
Observations (or Sum Wgts)	19

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	6	10.659974	1.77666	3.2678
Error	12	6.524236	0.54369	Prob > F
C. Total	18	17.184211		0.0383

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF	Des Std Error
Intercep	-0.539229	1.239675	-0.43	0.6713	0	.	1.6812548
LASI	-0.622961	0.535478	-1.16	0.2673	-0.32342	2.4426667	0.7262189
PRAC	0.358874	0.220952	1.62	0.1303	0.342267	1.4035317	0.2996566
YEARS	-0.068983	0.03964	-1.74	0.1074	-0.32894	1.1292938	0.0537603
SPEAK	0.0936044	0.567228	0.17	0.8717	0.038686	1.7370866	0.7692786
VISIT	2.0984127	0.651206	3.22	0.0073	0.677156	1.3957686	0.8831695
DAYS	-0.003578	0.0012	-2.98	0.0114	-0.98413	3.4421201	0.001627

67

Delta DLPT Score Pearson's Correlation Output for 2005 - 2006

Correlations

	DELTA65	LASI	PRAC	YEARS	SPEAK	VISIT	DAYS
DELTA65	1.0000						
LASI	0.1563	1.0000					
PRAC	-0.0243	-0.3455	1.0000				
YEARS	-0.3189	-0.1460	0.1775	1.0000			
SPEAK	-0.1687	0.2757	-0.0290	-0.2577	1.0000		
VISIT	0.3654	-0.0548	0.0681	-0.1493	0.1072	1.0000	
DAYS	-0.3388	-0.5857	0.4724	-0.0133	0.2699	0.4126	1.0000

Scatterplot Matrix

Delta DLPT Score Regression Output for 2004 - 2005

DELTA_54 Predicted P=0.933
RSq=0.19 RMSE=0.7733
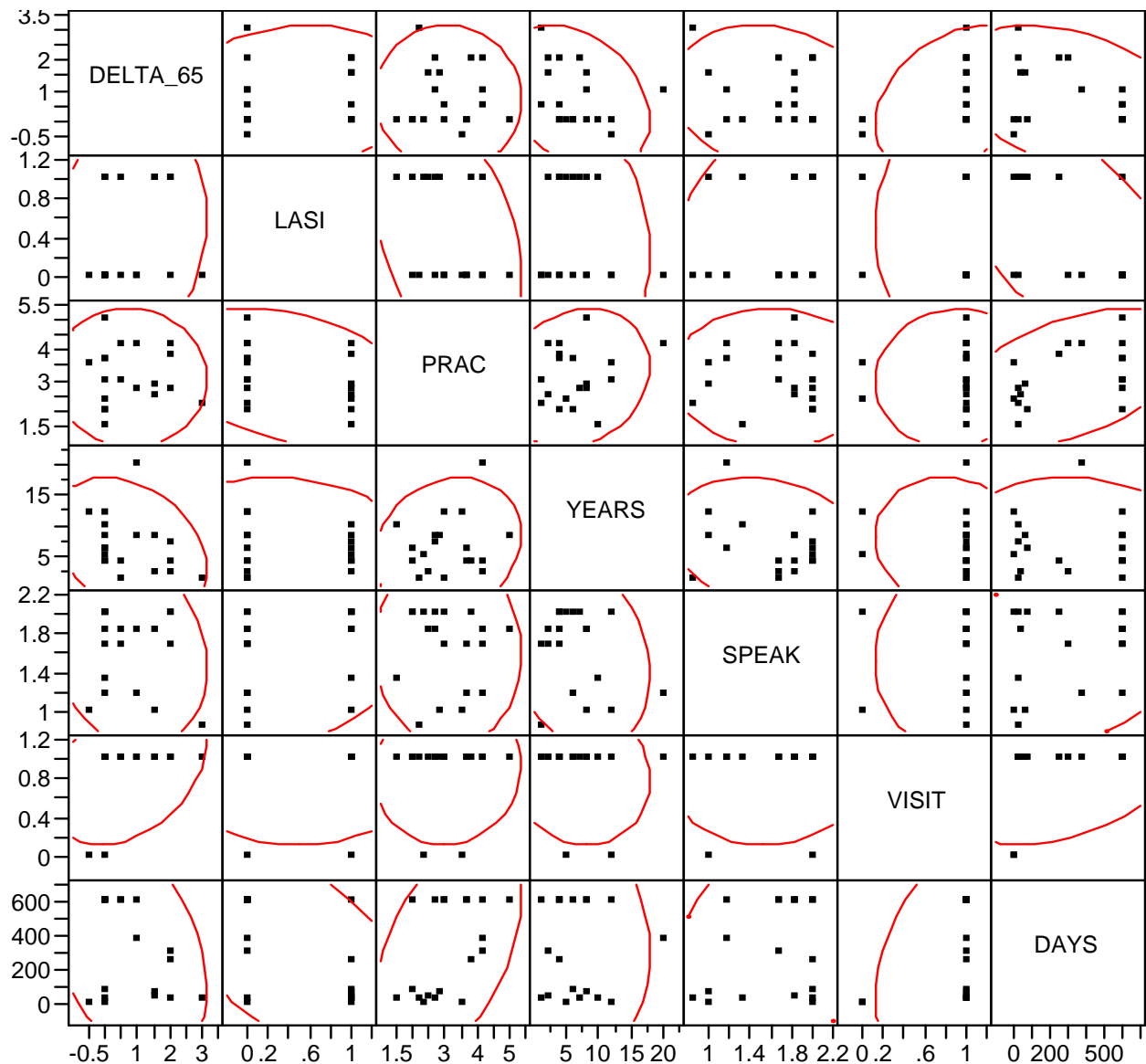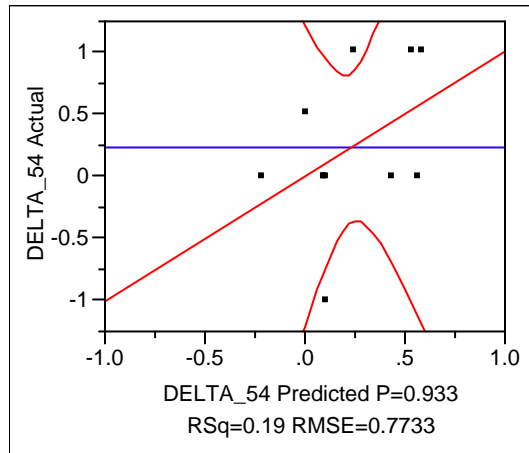
Summary of Fit

RSquare	0.187905
RSquare Adj	-0.62419
Root Mean Square Error	0.773303
Mean of Response	0.227273
Observations (or Sum Wgts)	11

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	5	0.6918326	0.138367	0.2314
Error	5	2.9899855	0.597997	Prob > F
C. Total	10	3.6818182		0.9330

Parameter Estimates

Term		Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF	Design Std Error
Intercep	Biased	-0.245863	2.080976	-0.12	0.9106	0	.	2.6910235
LASI		-0.018857	1.558278	-0.01	0.9908	-0.01623	11.074378	2.0150944
PRAC		0.195871	0.236936	0.83	0.4461	0.360405	1.1702248	0.3063955
YEARS		-0.026703	0.100716	-0.27	0.8015	-0.13751	1.6562003	0.1302419
SPEAK		0.0122673	0.838235	0.01	0.9889	0.006457	1.1987104	1.083967
VISIT	Zeroed	0	0	.	.	0	0	0
DAYS		6.7172e-5	0.003022	0.02	0.9831	0.029336	10.727357	0.0039084

**Delta DLPT Score Pearson's Correlation Output for 2004 - 2005**

Correlations

	DELTA_54	LASI	PRAC	YEARS	SPEAK	VISIT	DAYS
DELTA_54	1.0000						
LASI	-0.2008	1.0000					
PRAC	0.4092	-0.3353	1.0000				
YEARS	-0.2349	0.2507	-0.2537	1.0000			
SPEAK	0.0738	-0.3272	0.0801	-0.1657	1.0000		
VISIT	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	
DAYS	0.1488	-0.9259	0.2725	-0.0289	0.3544	0.0000	1.0000

Scatterplot Matrix

70

Delta DLPT Score Regression Output for 2003 - 2004

DELTA_43 Predicted P=0.3574
RSq=0.65 RMSE=1.2924
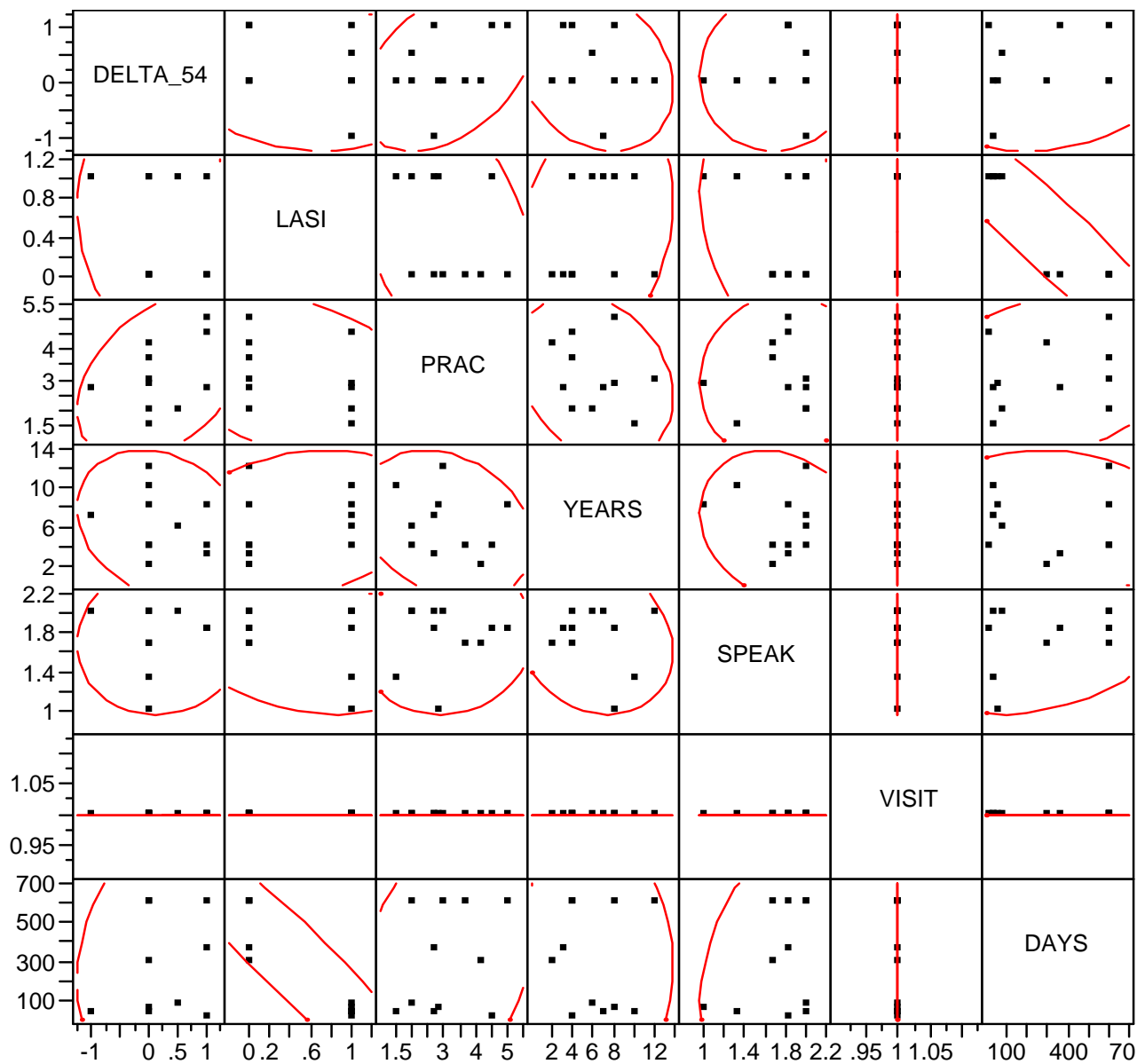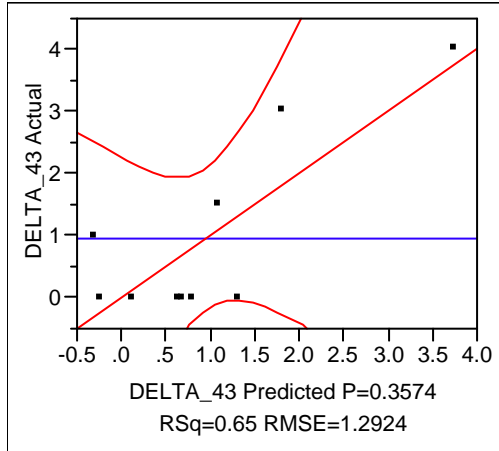
Summary of Fit

RSquare	0.652454
RSquare Adj	0.218022
Root Mean Square Error	1.292436
Mean of Response	0.95
Observations (or Sum Wgts)	10

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	5	12.543434	2.50869	1.5019
Error	4	6.681566	1.67039	Prob > F
C. Total	9	19.225000		0.3574

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF	Des Std Error
Intercep	5.6494298	2.7646	2.04	0.1105	0	.	2.1390613
LASI	-2.381472	1.365935	-1.74	0.1562	-0.84143	2.680729	1.0568682
PRAC	-0.830102	0.63574	-1.31	0.2617	-0.64063	2.7705192	0.491893
YEARS	-0.141227	0.107865	-1.31	0.2606	-0.38932	1.0176354	0.0834586
SPEAK	0.1106494	1.357604	0.08	0.9390	0.032149	1.7907739	1.0504225
DAYS	-0.002648	0.00306	-0.87	0.4355	-0.47126	3.4111914	0.0023672

Delta DLPT Score Pearson's Correlation Output for 2003 - 2004

Correlations

	DELTA43	LASI	PRAC	YEARS	SPEAK	DAYS
DELTA43	1.0000					
LASI	-0.1178	1.0000				
PRAC	-0.3241	-0.7378	1.0000			
YEARS	-0.4500	0.0961	-0.0364	1.0000		
SPEAK	-0.3076	0.0337	0.0955	0.0409	1.0000	
DAYS	-0.3829	-0.6098	0.6821	0.0094	0.4971	1.0000

Scatterplot Matrix

72
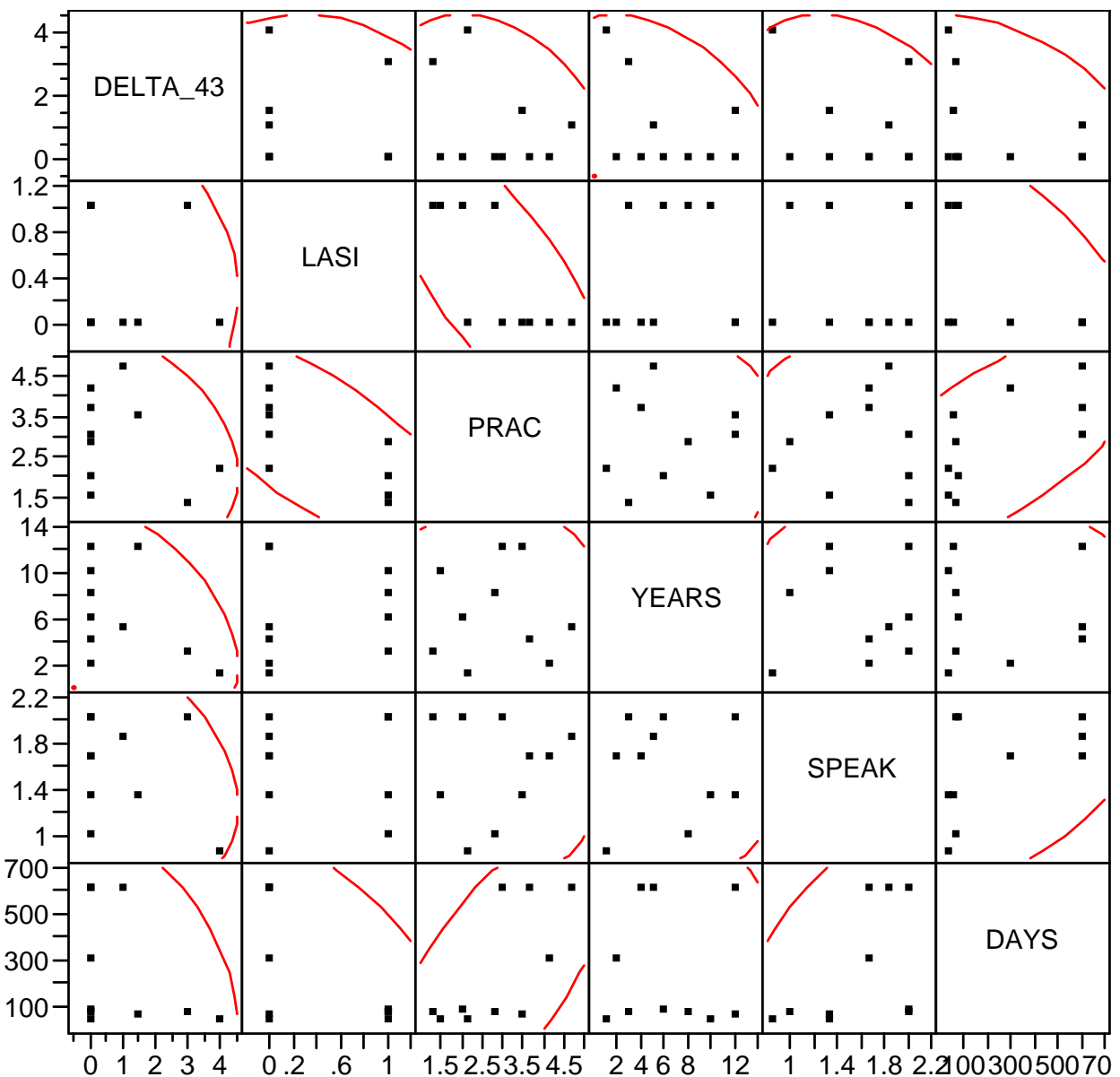
References

Ackerman, Phillip L. and Eric D. Heggestad. "Intelligence, Personality, and Interests: Evidence for Overlapping Traits," Psychological Bulletin, 121(2): 219-45 (1997).

Air Force Culture and Language Policy Office, email from Capt Greg Duffy dated 11 November 2007.

Anderson, Stephen R. "How Many Languages Are There in the World?" Excerpt from unpublished article. n. pag. http://www.lsadc.org/info/ling-faqs-howmany.cfm. Downloaded 22 February 2008.

Jones, William. "Some Thoughts on User Reliability." Excerpt from unpublished article. n. pag. http//www.dtic.dla.mil/defenselink. 20 March 1997.

Austin, Elizabeth J., Donald H. Saklofskea and Paul S. Minski. "Factor Structure and Validity of a Trait Emotional Intelligence Measure," Personality and Individual Differences, 34(4): 707-721 (2002).

Bandura, A., "Perceived Self-Efficacy in Cognitive Development and Functioning," Educational Psychologist, 28(2): 117-148(1986).

Bandura, A. (1994), Self-efficacy. *Encyclopedia of Human Behavior, Vol. 4*, New York: Academic Press.

Bateman, Thomas S. and Michael J. Crant, "The Proactive Component of Organizational Behavior: A Measure and Correlates," Journal of Organized Behavior, 14: 103-118 (1993).

Bergeman C. S., Heather M. Chlpuer, Robert Plomin, Nancy L. Pedersen, G.E. McClearn, John R. Nesselroade, Paul T. Costa Jr., Robert R. McCrae, "Genetic and Environmental Effects on Openness to Experience, Agreeableness, and Conscientiousness: An Adoption/Twin Study," Journal of Personality, 61(2): 159-179 (1993).

Bernat, Eva and Inna Gvozdenko, "Beliefs about Language Learning: Current Knowledge, Pedagogical Implications, and New Research Directions," Teaching English as a Second Language, 9(1): 12 (2005).

Brand, Chris R. "Open to experience-closed to intelligence: Why the Big Five Are Really the Comprehensive Six," European Journal of Personality, 8: 299–310 (1994).

Breen, M. and S. Mann, *Shooting Arrows at the Sun: Perspectives on a Pedagogy for Autonomy*. Longman, London, 1997.

Brown, H. Douglas. Teaching *by principles: An Interactive Approach to Language Pedagogy*. New York: Addison Wesley Longman, 2001.

Carrell, Patricia L., Moneta S. Prince and Gusti G. Astika, "Personality Types and Language Learning in an English as a Foreign Language Context," Language Learning, 46(1): 75-99 (1996).

Cattell R. and J. Horn, "A Check on The Theory of Fluid and Crystallized Intelligence with Description of New Subtest Designs," Journal of Educational Measurement, 15(3): 139-164 (1978).

Cavanaugh, J. C., and Blanchard-Fields. Adult *Development and Aging (5th ed.).* Belmont: Thomson Wadsworth, 2006.

Chamot, A.U., and J.M. O'Malley, *1996: Implementing the Cognitive Academic Language Learning Approach (CALLA).* Manoa: University of Hawaii Press, 1996.

Cheek, J. M. and A. H. Buss, "Shyness and Sociability," Journal of Personality and Social Psychology, 41: 330-339 (1981).

Clark, L. A. and D. Watson. *Handbook of Personality: Theory and Research, 1999*. Retrieved 13 Dec 2007 from books.google.com, 1999.

Cotterall, Sarah, "Key Variables in Language Learning: What Do Learners Believe About Them?," Science Digest, 27(4): 493-513(2002).

Coan, Richard W. "Measurable Components of Openness to Experience," Journal of Consulting and Clinical Psychology, 39(2): 346-355 (1972).

Costa, Paul T. and Robert R. McCrae. *Trait Psychology Comes of Age*. Lincoln, NE: University of Nebraska Press, 1992.

----. "Stability and Change in Personality Assessment: The Revised NEO Personality Inventory in the Year 2000," Journal of Personality Assessment, 68: 86-94 (1997).

Crant, J. Michael, "The Proactive Personality Scale as a Predictor of Entrepreneurial Intentions," Journal of Small Business Management, 34: 21 (1996).

Author Unknown. Definitions of Values, (2001). Retrieved 6 Dec 2007, from http://www.ethics.org/resources/definitions-of-values.asp

Dewaele, Jean-Marc, "Extraversion et Richesse Lexicale Dans Deux Styles d'Interlangue Francaise," Review of Applied Linguistics, 100: 87-105 (1993b).

Dewaele, Jean-Marc and Ann Furnham, "Extraversion: The Unloved Variable in Applied Linguistic Research," Language Learning, 49(3): 509-544 (1999).

Dewaele, Jean-Marc and Ann Furnham, "Personality and Speech Production: a Pilot Study of Second Language Learners," Personality and Individual Differences, 28(2): 355-365 (2000).

Dewaele, Jean-Marc, "Investigating the Psychological and Emotional Dimensions in Instructed Language Learning: Obstacles and Possibilities," The Modern Language Journal, 89(iii): 367-380 (2005).

Dewaele, Jean-Marc and Pavlenko, A., "Emotion Vocabulary in Interlanguage,". Language Learning, 52(2): 265-324 (2002).

Dewaele, Jean-Marc, "Predicting Language Learners' Grades in the L1, language learning, L3 and L4: The Effect of Some Psychological and Sociocognitive Variables," International Journal of Multilingualism, 4(3): 169-197(2007).

Digman, J.M., "Personality Structure: Emergence of the Five-Factor Model," Annual Review of Psychology, 41: 417-440 (1990).

Ehrman Madeline E. and Rebecca L. Oxford. "Cognition Plus: Correlates of Language Learning Success," The Modern Language Journal, 79(1): 67-89 (1995).

Ender, Phil, "UCLA Department of Education Glossary of Psychological terminology" (1998) Downloaded 10 Jan 2008 at http://www.gseis.ucla.edu/courses/ed230a2/internal.html.

Estrada, Veronica L. "Living and Teaching Along the U.S./Mexico Border: Midwestern Student Interns' Cultural Adaptation, Experiences in Texas Schools," Bilingual Research Journal, 23(2-3): 14-27 (1999).

Eysenck, H. J., *A Model for Personality*. New York: Springer-Verlag. (1981).

Field, Andy. *Discovering Statistics Using SPSS (2nd Ed.)*. London: Sage Publications, 2005.

Fitzgerald, E. T., "Measurement of Openness to Experience: A Study of Regression in the Service of the Ego," Journal of Personality and Social Psychology, 4: 655-663 (1966).

Furnham, A. (1990). *Language and personality*. In H. Giles and W. P. Robinson (Eds.), *Handbook of Language and Social Psychology*, 1990.

Goldberg L.R., "The Structure of Phenotypic Personality Traits," American Psychologist, 48(1): 26-34(1993).

Goldberg, L. R., J. A. Johnson, H. W. Eber, R. Hogan, M. C. Ashton, C. R. Cloninger, and H. C. Gough, "The International Personality Item Pool and the Future of Public-Domain Personality Measures,"Journal of Research in Personality, 40: 84-96 (2006).

Korunka, Christian, Hermann Frank, Josef Mugler and Manfred Lueger, "The Entrepreneurial Personality in the Context of Resources, Environment, and the Startup Process – A Configurational Approach," Entrepreneurship Theory and Practice 28(1): 23-42 (2003).

Kyllonen, Patrick C. *Smart Testing*. Westport, C.T., U.S.: Greenwood Press/Greenwood Publishing Group, Inc., 1997.

Lane, David M., "HyperStat Online Statistics" (2008) Downloaded 8 January 2008 at http://davidmlane.com/hyperstat/index.html .

Lee, C., and P. Bobko, "Self-efficacy Beliefs: Comparison of Five Measures," Journal of Applied Psychology, 79: 364-369 (1994).

Lee S., and H. Klein, "Relationships Between Conscientiousness, Self-Efficacy, Self-Deception, and Learning Over Time," Journal of Applied Psychology, 87(6): 1175–1182 (2002).

MacIntyre, Peter D. and Catherine Charos, "Personality, Attitudes, and Affect as Predictors of Second Language Communication," Journal of Language and Social Psychology, 15(1): 3-26 (1996).

Martocchio, Joseph J., and Timothy A. Judge, "Relationship Between Conscientiousness and Learning In Employee Training: Mediating Influences Of Self-Deception and Self-Efficacy," Journal of Applied Psychology, 82(5): 764-773(1997).

Matthews, G., and L. Dorn, "Cognitive and Attentional Processes in Personality and Intelligence," Personality and Individual Differences, 28: 355-365(2000).

Matsuo, Makoto and Takashi Kusumi, "Salesperson's Procedural Knowledge, Experience and Performance: An Empirical Study in Japan," European Journal of Marketing, 36(7/8): 840-854 (2002).

McCrae R., and O. John, "An Introduction to The Five-Factor Model and Its Applications," Journal of Personality, 60: 175-215 (1992).

McCrae, Robert R., "Moderated Analyses of Longitudinal Personality Stability," Journal of Personality and Social Psychology, 65(3): 577-585 (1997).

Middleton, Michael R., *Data Analysis Using Microsoft Excel: Updated for Office XP*. Belmont, California: Wadsworth Publishing Co. (2003).

Mischel, W., *The Interaction of Person and Situation. In D. Magnusson and N. S. Endler (Eds.), Personality at the Crossroads: Current Issues in Interactional Psychology*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc. (1977).

Moon H., "The Two Faces of Conscientiousness: Duty and Achievement Striving in Escalation of Commitment Dilemmas," Journal of Applied Psychology, 86(3): 533(2001).

Mount, M. K., and M. R. Barrick, "The Big Five Personality Dimensions: Implications for Research and Practice in Human Resources Management," Research in Personnel and Human Resources Management, 13: 153-200 (1995).

Moutafi Joanna, Adrian Furnham, and L. Paltiel, "Why is Conscientiousness Negatively Correlated with Intelligence?," Personality and Individual Differences, 37(5): 1013-1022 (2004).

Moutafi, Joanna, Adrian Furnham and James Crump. "What Facets of Openness and Conscientiousness Predict Fluid Intelligence Score?," Learning and Individual Differences, 16: 31-42 (2006).

Mullins, P., *Successful English Language Learning Strategies of Students Enrolled in the Faculty of Arts, Chulalongkorn University, Bangkok, Thailand*. Unpublished Doctoral Dissertation, United States International University, San Diego, CA, 1992.

Naiman, N., Frohlich, M., Stern, H., & Todesco, A. (1978). The Good Language Learner. Research in Education Series 7. Toronto: OISE Press.

Nunan, David, "Strategy Training in the Language Classroom: An Empirical Investigation. RELC 28(2): 56–81 (1997).

Oller J., K. Kim, L. Jarvis and Y. Choe, "Testing Relations Between Language (Verbal) And Nonverbal Abilities In Children And Adults Acquiring A Non-Primary Language. Language Testing, 18(1): 33-54 (2001).

O'Reilly, C. A. and J. A. Chatman. Culture As Social Control: Corporations, Cults, and Commitment, Research in Organizational Behavior 18. Greenwich, CT: JAI Press, 1996.

O'Sullivan, Elizabethann and others. *Research Methods for Public Administrators.* New York: Longman press company, 2003.

Oxford, R. and Jill Shearin, "Language Learning Motivation: Expanding the Theoretical Framework," The Modern Language Journal, 78(1): 12-28 (1994).

Oxford, R. 2003: *Language Learning Strategies: What Every Teacher Should Know*. Boston: Heinle and Heinle, 2003.

Parker, Ann L., Philip B. Mohr and Carlene Wilson, "Attitudinal and Personality Predictors of Diversionary Behavior by Police," Policing: An International Journal of Police Strategies and Management," 27(1): 9-21 (2004).

Pressley, Michael, John G. Borkowski, Martha Carr, and Elizabeth Rellinger, (1990) *Self-Regulated Cognition: Interdependence of Metacognition, Attributions, and Self-Esteem*. Books.google.com as downloaded on 10 January 2008 from http://books.google.com/books?hl=enandlr=andid=2_oKPg5GycwCandoi=fndandpg=PA 53anddq=+%22The+Interrelation+of+Cognition,+Motivation,+and+Personality%22ando ts=41LrSLPqFoandsig=y89K0ZB1RqMNLD67Zqp-7q8zujg

Roberts B., O. Chernyshenko, S. Stark and L. Goldberg, "The Structure of Conscientiousness: An Empirical Investigation Based on Seven Major Personality Questionnaires," Personnel Psychology, 58(1): 103-139 (2005).

Robinson, Douglas. *Becoming a Translator: An Introduction to the Theory and Practice of Translation*. Google.books.com: 2003. http://books.google.com/books

Ruethling, G. "Classes in Chinese Grow as the Language Rides a Wave of Popularity," *The New York Times*, 10: 31 (October 15, 2005).

Rusnock, Christina. "*One Smart Statistical Cookie*", Good Karma Publishing, Dayton, OH 2008

Shadish, William R., Thomas D. Cook and Donald T. Campbell. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Houghton Mifflin Company Boston New York, 2002.

Sockett, H., "Education and Will: Aspects of Personal Capability," American Journal of Education, 96: 195-214(1988).

Sutter, R., "Predictors of Pronunciation Accuracy in Second Language Learning, Language Learning, 26(2): 233–253(1976).

Stewart, G. L., "Trait Bandwidth and Stages of Job Performance: Assessing Differential Effects for Conscientiousness and its Subtraits. Journal of Applied Psychology, 84: 959-968 (1999).

Storm, P. and S. DeVries, "Personality Psychology and the Workplace," MLA Forum, 5(2): article 3 (2006).

Thurstone, L.L., "The Vectors of Mind," Psychological Review, 44: 1-32 (1934).

Tesch, Stephanie A. and Kathleen A. Cameron. "Openness to experience and development of Adult Identity," Journal of Personality, 55: 615-630 (1987).

Triola, Mario F., *Elementary Statistics, 7th Ed.* Reading, MA: Addison-Wesley, *1998.*

Van Eerde, W., "A Meta-Analytically Derived Nomological Network Of Procrastination," Personality and Individual Differences, 35(6): 1401-1418 (2003).

Wen, W. and R. Cle´ment, "A Chinese Conceptualization of Willingness to Communicate in ESL," Language, Culture and Curriculum, 16(1): (2003).

Wilson, G. Introversion/extraversion. In T. Blass (Ed.), *Personality Variables in Social Behavior* . Hillsdale, NJ: Lawrence Erlbaum Associates, (1977).

Wong, M., "Language Learning Strategies and Language Self-Efficacy," RELC Journal, 36(3): 245-269 (2005).

Zimmerman, B. J. and M. M. Pons, "1986: Development of a Structured Interview for Assessing Student Use of Self-regulated Learning Strategies," American Educational Research Journal, 23: 614-628

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Christian R. Paasch
1500 Wilson Blvd, Suite 900
Rosslyn, VA 22209

Charlie Underhill, Lt Col, USAF
Pentagon, 1040 Air Force
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14. ABSTRACT

Communicating with other nations in their native language is an important and necessary aspect of a successful United States' foreign policy. Critical to this success is the ability of military personnel to communicate clearly when in contact with foreign nationals, whether in peace-time or war. The Air Force has made great strides in the past 10 years to improve its foreign language capability, particularly through its application of the language immersion program. The LASI program has significantly improved the foreign language capability of the Air Force, specifically those with previous language scores in the mid-tier range. The main goal of this thesis was to quantify that increase in language capability, thus allowing those responsible for the Air Force language capability to make appropriate decisions regarding the future direction of the Air Force's Language program. An additional aspect of this thesis is to investigate possible correlations between language capabilities and personality dimensions; therefore, as part of this study, Air Force officers (linguists) took a survey to obtain language scores, measure personality dimensions and efforts to retain their language.

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